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INTERNATIONAL CONFERENCE ON EDUCATION 2019

The International Conference on Education (ICE 2019) provided an excellent platform for knowledge sharing and networking to explore new opportunities, latest developments and current issues in education.

The conference focused on innovation and technology in education, assessment in the 21st century and access to education and lifelong learning.

SUB-THEMES

Innovations and Technology in Education

The emergence of the Internet has created new learning opportunities. Teachers now facilitate the learning process in a learner-centred environment. The use of technology in education is creating renewed interest in best practices and innovative designs for successful delivery of educational outcomes. The areas of interest include pedagogies, learning objects, learning platforms and learning analytics.

Assessment in the 21st Century

New research focusing on types of assessment has emerged as organisations and institutions seek to rediscover best practices and innovative solutions. There are now new types of assessment which are influenced by data mining and analysis of assessment results. The emergence of massive open online courses have also created an interest in distributed assessment.

Access to Education and Lifelong Learning

A large number of adults are unable to continue their studies at the tertiary level for various reasons. Access to education is still a worldwide problem due to inequalities linked with gender, ethnicity, wealth and location. Many organisations and institutions are still grappling with issues of how to improve access and provide learning opportunities for those who are disadvantaged and marginalised.

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SUB THEME 1:
INNOVATIONS & TECHNOLOGY IN EDUCATION



CAPACITY BUILDING THROUGH GRAPHIC DESIGN SOFTWARE USAGE IN OPEN UNIVERSITY MALAYSIA

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ABSTRACT

In the rising economy and fast paced technologies, companies are finding ways to build the capacity of their workforce using cheaper or free technology solutions that can collaborate, share, develop the relevant knowledge and skills. This process is a priority in order to obtain, improve, and retain the skill needed to do their jobs competently or to a greater capacity. Therefore, the widespread use of open educational resources particularly free software seems to offer promising solution in capability building efforts of an individual or organisation facing constraints in the workplace. Thus, this study aims to explore the effectiveness of capacity building initiatives through the use of graphic design software for the targeted support workforce of Open University Malaysia. Accordingly, several workshops were conducted using graphic design software known as Inkscape. Furthermore, a survey was carried out to explore the awareness, perceived ease of use and intention to use of the Inkscape software. The results are very positive and encouraging, especially when the participant are able to create attractive design works and are willing to continue producing them at their workplace.

Keywords: *Capacity Building, Graphic Design, OER, OSS, Inkscape*

INTRODUCTION

In today's rapidly changing environment, there is considerable concern that the workforce in the higher education may lack the capacity and technical expertise to keep up with changes or demands of new practices particularly in making their institution's programme offerings visible and desirable. This concern is important to be addressed as higher education continues to grow, increased competition places more pressure on institutions to market their programmes. The institutions need to creatively explore to support and market their programmes to reach a wider array of prospective students. The promotional activities blended with traditional approach to evolving digital marketing landscape seems promising for greater potential in rapidly increasing their programme visibility. Universities should be managing their brands more proactively by improving their marketing communications to potential students and other stakeholders ([Chapleo, 2015](#)).

However, having the competency to market the programmes as well as creating their own marketing campaign are still a big concern. It is important to note that workers are in need of further and targeted learning opportunities for their professional development and capacity building in their line of work. Nevertheless, institutions are aware that they must provide their workforce with the right skill in the areas that they need most, but the challenge is how to provide equal professional development opportunities at a low or no additional cost to the institution or to their workforce. Funding for capacity

building programmes has reduced in recent years due to escalating operation costs, financial pressures and uncertain economic climate. This trend suggests that workers will increasingly need to manage their own professional learning, including evidencing their performance against specified metrics and frameworks ([Gibbs, 2013](#)).

One solution for this concern in providing flexibility and cost-effective capacity building opportunities is by embracing the advantage of Open Educational Resources. [Bossu & Willems \(2017\)](#) highlighted that the use of community-based creation will increase access to education, improve quality, reduce educational cost and promote collaboration among learners. Thus, the purpose of this study is to build the capacity of Open University of Malaysia (OUM) workforce using graphic design software to support and promote the programme offering. Discussion of the study is concerned with two main questions. First, what are the feedback after experiencing using the graphic design software? Secondly, are the graphic designs created effective enough to support learners and promote the programme offering? In answering the questions raised, the feedback on the graphic design software experienced are described. For the latter, capacity building strategies and recommendation are discussed through open educational resources to support learners and promote the programme offering.

LITERATURE REVIEW

The term Open Educational Resources (OER) was coined at UNESCO's 2002 Forum on Open Courseware as "teaching, learning and research resources in any medium, digital or otherwise, that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions ([UNESCO, 2002](#)). Open educational resources include full courses, course materials, modules, textbooks, streaming videos, tests, software, and any other tools, materials, or techniques used to support access to knowledge ([Atkins, Brown et al., 2007](#)).

The acceptance of OER has been strongly accepted with the establishment of OpenCourseWare consortium that offer a way for effective collaboration with more than 200 members of higher education institutions ([Carson, 2009](#)) including the China Open Resources for Education (CORE) consortium, with 35-member universities. The Khan Academy now provides over 3,400 courses and is used by some 3.5 million students each month. Open source software projects also provided a major impetus for OER. Many software platforms for learning have been developed as open source projects, including learning management platform Moodle, Linux operating system and the Apache http server, statistical computing software known as "R" and many more free software.

The aspiration of OER movement fit perfectly with the direction of higher education institution in reducing the cost spend and enrich learning experience for capacity building of their workforce. Capacity building or best known also as capacity development initiate with the idea to empower people to realise their full potential. [Wignaraja \(2009\)](#) defines capacity building as the process through which individuals, organizations and societies obtain, strengthen and maintain the capabilities to set and achieve their own development objectives over time. While [Bolger \(2000\)](#) refers capacity development as approaches, strategies and methodologies to improve performance at the individual, organizational, network, sector or broader system level.

Capacity building is not a new concept in higher education. Such processes have been used for decades to prepare and train staff to adopt new procedures, new technologies, new policies and so forth ([Brew & Cahir, 2014](#)). Professional development and capacity-building are important and influential instruments to empower staff to embrace and participate in change ([Healey, Bradford et al., 2013](#)). In higher education, capacity building is pertinent particularly to the support workforce as it provides significant proportion of worker dealing with learner's affair in the learning centre or campus. The learning centre is a place that functions to provide variety of academic and administrative support such as class tutoring, registration, payment, academic advising or works dealing with other department or

centres in the most efficient manner. However, recent transformation in the model of learning centres moves toward the concept of a “learning commons” (Keating & Gabb, 2005). Learning commons, which often is equip with information technology as well, can become a place to serve students of today who have already come to expect quick response to questions asked. Thus, this approach is ideal for learning centre to support the learning commons of student needs to learn more in less time with greater ease and confidence with attractively designed of self-help instruction.

METHODOLOGY

This study has conducted several workshops with the aims to build the capacity of targeted OUM’s workforce using OER for graphic design known as Inkscape. The learning outcomes of the graphic design workshop are 1) participant able to install and use Inkscape software in creative manners, 2) participant able to manipulate the free resource of graphic, icon and font, 3) integrate all elements needed to design attractive and creative graphic works. During the training, participants were given additional printed handout (as in the appendix) and asked to explore the tools available creatively.

In seeking the insight, an online survey was carried out, right after workshop completion to measure awareness of the open educational resources available, perceived ease of use and intention to use of the software. Thirty participants attended the workshop voluntarily responded were mostly from the support workforce holding the position as executives, administrators and manager in the OUM Learning Centre. The workshops conducted for the period of two days with 15 participants per each session.

FINDINGS

The findings of this paper are discussed in relation to the survey instrument administered after completed the workshop regarding the usage of the graphic design software known as Inkscape. Before questions postulated specifically on the Inkscape usage, several questions on commercial software usage were asked as in Table 1. This was meant to get participant background using any other commercial graphic design software other than Inkscape.

Table 1: Survey Question on Commercial Graphic Design Software Usage

No	Question
1	Have you ever used or being trained using commercial graphic design software? (Yes, No)
1.1	If yes, what is the software name?
1.2	If yes, have you used it to design for OUM or personal usage?
1.3	If No, what is the reason for not using it?

In brief, 68% of the participant attended indicate that they are yet using any commercial graphic design software before, while, 32% of the participant have positively experienced using the commercial software. Among the preferred commercial software namely Adobe Photoshop and Adobe Illustrator used to design graphic for OUM or personal usage. Nevertheless, they are participant who have been trained with Adobe, yet to use the software on their own. Several concerns were highlighted as a reason, including, software license has expired, complexity of the software, high computer specification required to work with the software and the current job does not required to do any design works.

Table 2: Survey Question on OER Graphic Design Software Usage

Item.	Question
2	Have you ever used any of OER software in designing the graphic before? (Yes, No)
2.1	If yes, what is the software name?
3	How did you find the task to design the graphic using Inkscape software? (5-point Likert scale from Very difficult to very easy)
4	I would find the Inkscape software is easy to use. (5-point Likert scale from strongly disagree to strongly agree)
5	Do you have any intention to use Inkscape software for your personal or work usage? (Yes, No)
5.1	If yes, in what ways that you will use it?
6	Is there any other support that you need for graphic design in your workplace
7	Any opinion, on how the training can be further improved?

In regards of questions postulated on the usage of OER graphic design software as in Table 2. Surprisingly to note that, none of the participants have use any of OER software before to design graphic. After the Inkscape usage, the findings from item 3 and 4 indicates roughly equal positive experience. Item 3 found, 87% indicates that the task to design graphic using Inkscape software is either very easy or easy to use and the rest indicates neutral. Meanwhile for item 4, 91% either strongly agree or agree that Inkscape software is easy to use, and the rest 8% is neutral. Item 5, indicates 96% stated the agreement on the intention to use the software for various promotional purposes such as to design flyers, banners, poster, leaflet, video clips, buntings and announcements. Further support needed such as chances to upgrade their computer requirement and further training on creative artworks. Further improvement can be made by having more graphic design workshops for different level of expertise.

DISCUSSION

The workshop conducted intended to build the capacity of OUM's targeted support workforce using OER graphic design software in their workplace. The findings indicated positive experience on the easiness of the software to do graphic design and willingness to use the software in their workplace. The graphic design workshop offers an advantage to create promotional resources such as ads, poster, brochures, pamphlet, banner, leaflet, booklet or many other types of design. Nowadays, marketing campaign can be published through the source of social media sites, like Facebook, MySpace, YouTube, Flickr, blogs, Twitter have big potential to influence for higher education choices. Thus, the capacity for graphic design skill seem to be as priority particularly to the workforce in OUM's learning centre who is in the best position to campaign the programme offering to the potential learners while assisting the existing learners in their study.

Nevertheless, the graphic design skill is not limited to only creating promotional materials but can be further enhanced in creating self-help learning instructions. This initiative is to capture common learning inquiries that learners been asking at the learning centres throughout semester. Therefore, self-help instructions such as online registration, Employees Provident Fund (EPF) withdrawal has been created to assist for what learners should know and be able to do in an easy step. Even though, learning instruction has been fairly explained in broad level of detail from the student handbook accessible through online, learners of today always expect fast and quick response whenever they come to the learning centre asking for their needs. These learning instructions designed can be posted at the notice board or noticeable corner in the learning centre. This effort will help to reduce repetitive inquiries which by then give an advantage to the support workforce to push their time in promoting the programme offering.

Building workforce capacity with graphic design competency is not a simple task. There is no magic formula or predetermine working days that guarantees effective design created. Instead, the process is a trade-off between workload, creativity and desire to learn. Nowadays worker plays multiple roles and struggle to stay afloat. Adding tasks to be competent in designing their own marketing campaign can become time intensive. A sustainable strategy must be in place for creating the promotional design together and voluntarily share their idea and creative works from a shared platform within the community who have the same interest or nature of work. This active collaboration to some extent will minimise the effort to create creative works for every single event and have the advantage of many design choices or input from the community.

However, strategies for capacity building is a long-term and continuing process and must take into account people's motivation to participate in the activities. It is through recognition or incentives offer will push or complement the motivation for workforce to learn, adapt and grow to their full potential.

The policy maker of the institution need to engage in serious capacity-building efforts such as incentive for academics to improve quality content, incentive for worker to pursue professional development or engage in the improvement of operation process. Series of training need to be planned to enhance their knowledge, skills and understandings as well as positive attitudes for the desired developmental change.

CONCLUSION

Capacity building encompasses people, technology, institution and resource capabilities. A fundamental goal of capacity building is to obtain, strengthen and maintain the capabilities of every stakeholder in fulfilling their own objectives and potential. Capacity building with open educational resources movement enables new forms of collaboration and production. This is important particularly in stiff competition to market and sustain the trust of the programme offering, increasing competency with the right skill in the areas that they need most for effective support and marketing capacity give an advantage to better understand the decision making, perception and branding of the higher education. However, the needs for capacity building are always changing and there are no ready solutions. Further research need to be explored with mechanism such as partnership development between institution and industry that give access to: knowledge and skills; innovative and proven methodologies; networking and funding opportunities; and strategies for advocacy, government relations and public outreach.

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ATTACHMENT

Open Educational Resources Creative Tools

1. Installing Inkscape (vector tool) <https://inkscape.org/en/>
2. Getting started with Inkscape:
 - <http://vektorrascheln.de/posts/2015/Dec/inkscape-fuer-einsteiger-teil-ii-praxis-en.html>
 - <https://fedoramagazine.org/getting-started-inkscape-fedora/>
 - <https://fedoramagazine.org/inkscape-adding-colour/>
 - <https://fedoramagazine.org/inkscape-design-imagination/>
 - <https://fedoramagazine.org/inkscape-fedoracape-creating-and-editing-paths/>
 - <https://imagesbyheatherm.wordpress.com/2009/10/05/text-in-a-circle-using-inkscape/>
 - <http://www.designmarkgraphics.co.uk/blog/articles/2013/02/22/draw-a-bright-sticker-inkscape.html>
 - <https://design.tutsplus.com/tutorials/kerning-spacing-and-other-text-tricks-in-inkscape--cms-20576>
 - <http://www.designmarkgraphics.co.uk/blog/articles/2014/12/04/create-curved-vector-ribbons-in-inkscape.html>
 - <https://design.tutsplus.com/categories/inkscape>

3. Utilising free vector graphics from:
 - <http://www.freepik.com/>
 - <http://vector.me/>
 - <http://retrovectors.com/>
 - <http://www.vectorportal.com/>
 - <https://www.vecteezy.com/>
 - <https://pixabay.com/>
 - <https://depositphotos.com/>
4. Utilising free icons from <https://www.flaticon.com/>
5. Searching for the best fonts of 2017:
 - <http://graphicdesignjunction.com/2017/01/50-best-free-fonts-for-2017/>
 - <http://imcreator.com/blog/free-fresh-fonts-2017-new-designs-every-month/>
 - <https://www.fontsquirrel.com/>
 - <https://fonts.google.com/>
6. Combine all! Be creative!!

COMPARATIVE ANALYSIS OF 5Es CONSTRUCTIVIST INSTRUCTIONAL AND LECTURE METHODS ON SS1 STUDENTS' ACHIEVEMENT IN BIOLOGY

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ABSTRACT

The study carried out the comparative analysis of the impact of 5Es constructivist instructional and lecture methods on students' achievement in biology. The study was carried out in Enugu Education zone of Enugu State, Nigeria. A quasi experimental research design was used for the study. Two research questions and three hypotheses guided the study. The population of the study consisted of two thousand three hundred and twenty four (2,324) senior secondary one (SS1) students from twenty three secondary schools in Enugu Education zone. Nine co-educational schools were stratified from the twenty three secondary schools within Enugu Education zone. From the nine (9) stratified co-educational schools, a total of 240 biology students were drawn using simple random sampling technique. Both the experimental and control groups were randomly sampled (by balloting) from each school. The experimental and control groups were taught the biology topics by their research assistants. The instrument used was the Biology Achievement Test (BAT) developed by the researcher and validated by three experts; two from Department of Science Education and one from Measurement and Evaluation department. A reliability co-efficient of 0.89 was obtained using Kuder-Richardson formulae 20. Mean and standard deviation statistics were used to answer research questions while analysis of covariance (ANCOVA) was used to test the hypotheses at an alpha level of 0.05 probability. Findings from this study showed that 5Es Constructivist Instructional Method has significant effect on students' achievement than the conventional lecture method; gender was a significant factor in students' achievement in biology, the male students achieved higher than the female. Based on the findings of the study the following recommendations were made; biology teachers should incorporate 5Es constructivist instructional method in their teaching and there should be training and retraining of biology teachers on 5Es constructivist method to enhance better instructional delivery.

Keywords: *Constructivism, Engagement, Exploration, Explanation, Elaboration & Evaluation*

INTRODUCTION

The study of science related subjects makes science an enviable one. The reason is that science can exert a dominant, if not decisive influence on the life of an individual and the world around us. Science can be referred to as the intellectual and practical activity encompassing the systematic study of the structure and behaviour of the physical and natural world through observation and experimentation. Science is a special type of discipline with peculiar characteristics, the prominent among them is the approach through which knowledge is pursued. This approach is commonly known as scientific method. Scientific method is a logical, rational and systematic process by which knowledge in the discipline is pursued and conclusion about nature around them derived (Ezugwu & Iloputaife, 2016).

The roles of science are widely recognised in our career, daily life and societal development. The awareness of the vital role of science and technology in natural development has prompted many nations to include science subjects in their school curricula, Nigeria inclusive. With this continued pressure of modern scientific demands, the Federal Ministry of Education in Nigeria adopted biology among other science subjects as courses to be taught to her citizenry.

Biology is important, not only for studying how living things work but is of immense benefit to human beings. Knowledge acquired through the study of Biology equips one with the basic skills and knowledge that are essential in the study of medicine, pharmacy, nursing, brewing, microbiology, agriculture, cellular biology, biotechnology (Ezugwu and Ozoagu, 2017).

LITERATURE REVIEW

Bearing in mind the great and remarkable importance of biology in our daily life and national development, the government, researchers, biology teachers and other science based agencies such as Science Teachers Association of Nigeria (STAN) have sought ways to improve students' achievement in sciences in the Senior School Certificate Examinations (SSCE) (WAEC, 2014).

Some teachers have found out that methods of teaching biology are responsible for the poor achievement in senior secondary school biology (Etuk, 2015). According to him, the continued use of the ineffective methods of teaching in our schools has reduced the ability of students to grasp relevant concepts than when exposed to lessons involving hands-on experience. Appropriate teaching methods will lead the students to acquire appropriate scientific skills, which likely enhance students' achievement in science.

Most science teachers adopt the most convenient teaching method (i.e. lecture method) which relieves them of stress in giving life to abstract concepts. Lecture method involves verbal presentation of ideas, concepts and generalization of facts. Lecture method leads to rote learning where by students memorize what they have learnt and regurgitate the facts as presented to them by the teacher (Njoku, 2014). Lecture method is teacher – centered with students being passive and contents are constantly taught as absolute knowledge.

However, it is now known that achievement in biology can be enhanced through a paradigm shift from the use of ineffective method of teaching to an approach that would enhance the development of science process skills, which will inculcate scientific processes and enable the students to construct knowledge on their own, which is what constructivism is all about.

Constructivism is a learning theory that explains how knowledge is constructed in the learner when information encounters existing knowledge that had been developed by experiences. It is an instructional approach that lays emphasis on the ways knowledge is acquired in order to adapt to the world. It is an active contextualized process of constructing knowledge rather than acquiring it. According to Ezugwu (2016), knowledge is constructed based on personal experiences and hypotheses through social negotiation. Each learner has a different interpretation and construction of knowledge. The student is not a blank slate (*tabula rasa*) but brings part of experiences and cultural factors to a situation. Constructivism has its roots in cognitive psychology. Discovery, experimental, collaborative, project-based and task-based learning processes are a number of applications that base teaching and learning on constructivism.

When learners encounter something new, they have to reconcile it with their previous ideas and experience, may be changing what they believe or discarding the new information as irrelevant. In many cases, they are active creators of their own knowledge. To do this, learners must ask questions, explore and assess what they know. The teacher makes sure he understands the students' pre-existing conceptions and guides the activity to address them and then build on them.

The constructivist strategy is considered a veritable tool for shifting science teaching from the traditional chalk-and-talk method which is teacher-centered to the hands-on method which is learner-centered. Therefore, it focuses on problem-solving, constructing and reconstructing ideas and methods. The progress made by students is being monitored by the teachers as it guides and promotes new pattern of thinking among students. Constructivist instructional model can be applied across learners of all ages, including adults. Constructivist view of learning recognizes the fact that students need time to express their current thinking capacities, interact with real objects, organisms and some laboratory equipment to develop a range of experiences on which to base their thinking (Ezugwu & Ozoagu, 2017). The 5Es model of constructivist instructional approach describes teaching sequence that can be used for effective teaching and learning. This model was developed by the Biological Science Curriculum Study (BSCS), a team led by the principal investigator, Roger Bybee.

The 5Es allow students and teachers to experience common activities; to use and build on prior knowledge and experiences; to construct meaning and to continually assess their understanding of a concept. This model also arranges learning experience so that students have the opportunity to construct their understanding of a concept over time. The 5Es describes a phrase of a concept over time and leads the students through 5 learning processes using words that begin with letter 'E' to wit: Engage, Explore, Explain, Elaborate and Evaluate. This innovative teaching method enhances students' achievement.

Academic achievement of a student is a measure of the extent he/she has achieved in his/her education goals. Achievement is the scholastic standing of a student at a given moment goal. According to Adeyemi (2015), the purpose of testing achievement is to help students and teachers evaluate and estimate the degree of success attained in learning a given concept. It is equally appropriate in determining the efficiency of instruction to boys and girls.

Research evidence (Bland, 2013) abounds to show that there are still controversies over which of the sexes (male or female) achieves better in sciences. Consequent on this state of affairs, there are different shades of opinion on whether the male or female achieves better in sciences, hence this study determined which of the sexes, male or female achieves better in sciences. An issue of contention in Nigeria is that gender roles may be difficult to change but as they are sociological label, they are subject to change. While some are of the view that males do better than females, others disagree with this view, arguing that achievement is a factor dependent on several factors such as socio-economic background, teaching method among others (Igwe 2016). When academic achievement of males and females in science subjects are compared however, some showed no significant difference (Nwagbo, 2014). In a similar study, Nwosu (2016) revealed that there is no significant difference in achievement of male and female students in chemistry while Ukozor and Uzomah (2015) revealed that gender is a significant factor in achievement in favour of males.

The search for methods and procedures for effective teaching and learning engendered the birth of many procedures which includes 5Es constructivist teaching. Consequent upon this state of affairs, it becomes imperative to use innovative instructional approach that could facilitate students' achievement in biology, hence the need to explore the effectiveness of 5Es constructivist instructional model on students' achievement in biology. Therefore, this work investigated the nexus between the effects of 5Es constructivist and conventional approaches on students' achievement in biology, in Enugu Educational zone of Enugu State. The study also investigated the influence of gender on students' achievement when exposed to 5Es constructivist Instructional model.

RESEARCH QUESTIONS

The study was guided by the following research questions.

1. What are the mean scores of 5Es constructivist instructional and lecture methods respectively on SS1 students' achievement in biology?
2. What is the influence of gender on mean achievement scores of SS1 students in biology when taught with 5Es constructivist instructional model?

HYPOTHESES

The following hypotheses were formulated to guide the study and were tested at 0.05 level of significance.

- HO₁** There is no significant difference in the mean achievement scores of SS1 students taught biology using 5Es constructivist instructional method and those taught with conventional (lecture) method.
- HO₂** There is no significant difference in the mean achievement scores of male and female SS1 students taught biology using 5Es constructivist instructional method.
- HO₃** There is no significant interaction effect of method of instruction and gender as measured by the Biology Achievement Test.

Method Design

The research design for the study was quasi-experimental research design, specifically the non-equivalent control group design. Quasi-experimental design was considered appropriate for the study because intact classes were used to avoid disruption of normal class lesson and there was non-randomization of the subjects for the study. The researcher used intact classes which comprised experimental group and the control group. The experimental group was taught with the 5Es constructivist model while the control group was taught using conventional lecture method.

Population

All the senior secondary one (SS1) biology students in all the government owned co-education secondary schools in Enugu Education zone formed the population of the study. Their total number was two thousand three hundred and twenty four students (Post Primary School Management Board Enugu North (PPSMB), 2017/2018 Academic Record). The choice of SS1 students was predicated on the fact that the course units taught during the study period fell within the SS1 curriculum which formed the foundation class in senior secondary education in Nigeria. Again, SS1 was not an exam class.

SAMPLE AND SAMPLING TECHNIQUE

A total of two hundred and forty students (240) formed the sample for the study. A purposive sampling technique was used in selecting two co-educational secondary schools out of 23 secondary schools in Enugu Education zone. The schools were Command Day Secondary School and Federal Government Secondary schools. The criteria for purposive sampling technique include equipped biology laboratory, qualified biology teachers, co-educational school and two streams of SS1 class each. The choice of co-educational schools is predicated on the fact that gender is a variable in the study instrument.

The researcher developed Biology Achievement Test (BAT). The BAT consists of 40 items multiple choice questions with four options; A, B, C and D. Items in the test were developed from the topics to be taught. BAT was administered as pre test and post test.

The Pre-Biology Achievement Test (Pre-BAT) was used to establish the level of Biology achievement of the students before treatment while the Post-Biology Achievement was used to determine the extent of students' achievement after treatment.

Validation of Instrument

The instrument was subjected to content validity. In content validity, the researcher carefully prepared a test blue-print or table of specification where both the cognitive levels as well as the subject contents were aligned on a two grid table. The researcher consulted two experts in the department of Biology Education and one expert in Measurement and Evaluation department from Anambra State University.

The biology experts checked the content of the test questions and made appropriate corrections. Again, the measurement and evaluation experts assessed the brevity and ambiguity of statements used in phrasing the test questions. They also requested to vet the purpose of the study, research questions, hypotheses, lesson plans to ensure their appropriateness in addressing the problem of the study.

Reliability of the Instrument

The instrument was subjected to trial testing. The trial testing was carried out at Comprehensive Secondary School, Ede-Oballa which was not part of the schools used for the study. The trial testing was carried out by administering 20 copies of the BAT to SS1 students and data obtained from the responses of students were used to estimate the reliability of the instrument. Trial-testing was done primarily to determine the clarity of the test items, internal consistency of the test items in achieving what they are meant to achieve as well as determining the actual time. Duration for the test was estimated using the average time taken by the first and last subject to complete the test. The reliability of the BAT was determined using Kuder-Richardson formula 20 resulting in a reliability co-efficient of 0.89. This indicates that the instrument was highly reliable.

Experimental Procedure

At the beginning of the experiment, the research assistants administered the Pre-BAT to both groups of subjects (the experimental and controls groups). No feedback on the tests was given to the students. Scores of the students were recorded and kept for use after the experiment by the researcher. For this study, two instructional approaches (5Es constructivist approach and conventional lecture method) were used.

The 5Es constructivist approach formed the experimental group and the conventional method was the control group. The experiment lasted for six weeks. One week out of six weeks was used for the training of the research assistants. The research assistants were biology teachers in the sampled schools who assisted in the study. The scores obtained after the experiment (pretest and post test) were collected by the researcher and used for data analysis.

Training of Research Assistants

One week training was organized for the research assistants that helped in carrying out the experiment. For the experimental group, biology teachers were trained on the necessary techniques required for teaching students using the 5Es constructivist approach which include the five stages highlighted below.

Engagement: The biology teachers were trained on how to introduce learning activities in the lesson that will capture the students' attention, stimulate their thinking and help them access prior knowledge (set induction).

Exploration: The biology teachers were trained on how to instruct the student and allow them to think, plan, investigate and organize collected information. They were taught how to observe and listen to students as they interact during class activities.

Explanation: The teachers were trained on how to get the students involved in analysis of their exploration and how to clarify and modify their understanding of their reflective activities. Furthermore, they were trained on how to encourage the students to explain concepts and definitions in their own words by using instances.

Elaboration: Teachers were instructed on how to give students opportunity to expand and solidify their understanding of the concepts.

Evaluation: The teachers were instructed on the need to observe students' knowledge and skills along with their application of new concepts and a change in thinking. The teachers were instructed to allow the students at this stage to assess their own learning and ask open-ended questions. After training, the teachers were allowed to teach a unit using the lesson plan prepared by the researcher to determine if they have mastered the lesson note.

METHOD OF DATA ANALYSIS

Mean and standard deviation statistics were used to answer research questions one and two. The null hypotheses HO_1 , HO_2 and HO_3 were tested using analysis of covariance (ANCOVA) at 0.05 level of significance.

Design Rule

For the null hypotheses, if the significant F value obtained is equal to or less than the table or critical value of F at 0.05 level of significance ($P < 0.05$) used in the study, the hypothesis is not rejected, otherwise it is rejected. For the mean, any score that is below 20 (i.e. less than 50%) is on the low side while any score between 20 and above is on the high side.

RESULTS

The results of the study were presented in the table below. The results were organized according to the research questions and the null hypotheses as follows.

Research Question One

What are the mean scores of 5Es Constructivist Instructional and lecture methods respectively on SS1 students' achievement in biology?

Table 1: Mean (x) and Standard Deviation (SD) of Students Achievement Score in Biology

Group	N	Pre Test		Post Test		Gain Score
		X	SD	X	SD	
Experimental Group (5Es Approach)	103	14.50	4.34	29.24	2.89	14.44
Control Group (Lecture Method)	137	15.49	4.21	23.67	3.56	8.18

The data on students' achievement in table 1 revealed that students taught biology using 5Es Constructivist Instructional Model had mean achievement score of 14.80 in pretest and 29.24 in post test while the mean achievement score of students taught biology using the conventional lecture method was 15.49 in pre test and 23.67 in post test. Students taught using 5Es constructivist instructional approach had gain score of 14.44 while their counterparts taught biology using lecture method had gain score of 8.18. Therefore, students taught biology using 5Es Constructivist method performed better than their counterparts taught using conventional lecture method.

Research Question Two

What is the influence of gender on mean achievement scores of SS1 students in biology when taught with 5Es constructivist instructional approach?

Table 2: Mean (x) and Standard Deviation (SD) of Male and Female Students' Achievement in Biology

Gender	N	Pre Test		Post Test		Gain Score
		X	SD	X	SD	
Male	101	15.34	4.13	28.10	3.14	12.76
Female	139	15.62	4.30	24.76	4.55	9.14

Data in table 2 revealed mean achievement score of 15.34 in pre test and 28.10 in post test for male students while the female students had mean achievement score of 15.62 in pretest and 24.76 in post test.

Male students had gain score of 12.76 while their female counterparts had gain score of 9.14. Male students therefore had higher achievement score than their female counterparts in biology.

HYPOTHESES

- HO₁** There is no significant difference in the mean achievement scores of SS1 students taught biology using 5Es constructivist instructional model and those taught with conventional lecture method.
- HO₂** There is no significant difference in the mean achievement scores of male and female SS1 students taught biology using 5Es constructivist instructional.
- HO₃** There is no significant interaction effect of method of instruction and gender as measured by the Biology Achievement Test.

Table 3: Analysis of Covariance of Students' Mean Achievement Scores in Biology

Sources of Variation	Sum of Squares	DF	Mean Square	F	SIG	DCS
Corrected Model	1743.748	8	217.968	31.749	.000	Sig
Intercept	5127.154	1	5127.154	746.824	.000	Sig
Pretest	174.430	1	174.430	25.553	.000	Sig
Method (Treatment)	631.404	1	631.404	91.971	.000	Sig
Gender	102.082	1	102.082	14.869	.000	Sig
Method & Gender	35.262	1	35.262	5.136	.025	Not Sig
Error	961.138	230	6.865			
Total	105993.000	239				
Corrected Total	2704.886	238				

Adjusted R square = .645 (Adjusted R squared .624)

For hypothesis one, data in table 3 showed that there is significant effect of method on students' achievement in biology $F(1,149) = 15.951, P < .000$.

The null hypothesis therefore was rejected because the significance is less than 0.05 indicating that there was significant difference in the mean achievement score of students taught biology using 5Es constructivist approach and those taught using conventional lecture method.

For hypotheses 2, Table 3 revealed that there is no significant influence $F(14.869) = P < 0.05$. The null hypothesis was rejected because the significance is less than 0.05 indicating that gender has significant main effect on students' achievement in biology. Hence, male students scored higher than female students.

For hypotheses 3, the result in Table 3 showed that F-ratio of 1.149 with associated probability value of 0.129 was obtained with regards to the interaction effect between instructional method and gender on students' achievement in biology. Since the associated probability (0.129) was greater than 0.05, the null hypotheses was not rejected. Thus, there was no significant interaction effect between instructional model and gender on students' achievement as measured by Biology Achievement Test.

SUMMARY OF FINDINGS

- Students taught biology using 5Es Constructivist method performed better than their counterparts taught using lecture method.
- The hypotheses showed that there is significant difference in the mean achievement score of students taught biology using 5Es Constructivist Instructional Model and those taught using the conventional lecture method.
- Male students had higher mean achievement score than their female counterparts taught biology using 5Es Constructivist approach. The test of hypotheses showed that gender is a significant factor in the mean achievement score of students in biology.
- There was no significance interaction effect between instructional method and gender on students' achievement as measured by Biology Achievement Test.

Discussion of Findings

The 5Es Constructivist method of instruction was superior to the lecture method in facilitating students' achievement in biology. The test of hypotheses showed that the instructional treatment (method) is a significant factor in the mean achievement scores of students in biology. The differences in performance might have been because the students were required to construct knowledge by themselves, thereby imbibing the scientific processes involved in learning biology, which enabled them to perform better than their counterparts taught biology using conventional method. The 5Es constructivist instructional method was more effective because the instructions were characterized by active students' involvement, thereby capturing the interest of the students and maximizing comprehension of the subject matter.

This finding is in line with the observations of Kacer (2016) that carried out a study on effect of 5Es learning cycle model in teaching trigonometry on students' academic achievement. The researchers found that students taught trigonometry using 5Es constructivist approach performed better than their counterparts taught using conventional lecture method. In addition, the findings of this study conform with the similar studies by Oludipe and Oludipe (2013), Sakalli (2015) and Cramer (2016) which revealed a significant difference between 5Es constructivist academic achievement in favour of 5Es constructivist approach.

Results of the study on the influence of gender on the mean achievement score of the students in biology showed that male students taught biology using 5Es constructivist approach performed better than their female counterparts. Null hypotheses showed that gender is a significant factor in the mean achievement scores of students in biology. This could be because of the different socialization processes of male and female persons in which the males are expected to explore their environment while the female ones are to conform or maintain their existing environment. The male students are allowed to play with toys and other forms of machines in the environment, which the females are not always exposed to.

Notwithstanding, male students significantly performed better than female students in biology. This finding supports the finding of Oludipe and Oludipe (2013) who found that male students taught Integrated Science using constructivist – based teaching strategy had higher mean attitude score than their female counterparts. The finding is also in agreement with the findings of Uzomah (2014) and Sakalli (2015) who found in their respective studies that male performed better than their female counterparts in science subjects. Contrary to these findings a study carried out by Ndioho (2015) indicated that male and female students performed equally in science subjects. Nevertheless, Ibiene (2016), found a high achievement in favour of girls in biology achievement test.

For the null hypotheses three, table 3 revealed that there is no significant interaction effect between instructional method and gender on students' mean achievement in biology. A study by Medu (2014) found no significant interaction effect between gender and treatment. Agomouh (2013) and Miriogu (2014) in their separate studies found no interaction effect of gender and instructional treatment. However, Baser (2015) reported a significant interaction effect between gender and instructional method on students' achievement.

RECOMMENDATIONS

1. In view of the fact that the 5Es Constructivist approach was more effective in teaching biology and enhancing students' achievement, the Ministries of Education should ensure that textbook authors incorporate 5Es constructivist approach in the Handbook for secondary school teachers.
2. Biology teachers should be trained on how best to use constructivist approach to facilitate students' achievement. This could be achieved through seminars and workshops for teachers in secondary schools.
3. Teachers should make teaching and learning of science gender friendly.

CONCLUSION

From the results obtained in the study on the impact of 5Es Constructivist Instructional methods on Students' Achievement in Biology, the researcher advocates for the use of 5Es constructivist approach in classroom since it enhances students' mastery of science concepts more than the conventional lecture method.

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CONTINUOUS QUALITY IMPROVEMENT IN MODULE DEVELOPMENT IN AN ODL INSTITUTION

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ABSTRACT

Open University Malaysia (OUM) is an open distance learning (ODL) institution; adopting the blended learning pedagogy which provides flexibility and time-effectiveness for self-paced study to its learners. Learners do self-learning most of the time. This calls for quality learning materials to support the learning process in an ODL setting. OUM responded to this call by leveraging on Internet-based technology to deliver educational content such as e-modules, video lectures, e-forums etc. to its learners. Learners can now access the University's e-content (2,431 e-modules and 288 video lectures) anytime, anywhere, via OUM's learning management system, myINSPIRE. Using descriptive and inferential statistics as the main analytical tool, this study aims to gain insight into learners' feedback on one of the core learning materials – the e-modules. Responses from learners from various programmes and clusters were collected via online surveys for two semesters (January 2018 and May 2018). A total of 238 and 488 learners responded to the January and May surveys respectively. This paper discusses three-modules in 10 dimensions from the instructional design perspective encompassing areas such as the design, formatting, self-check and activity questions, organisation of the content, ease of reading, graphics as well as overall satisfaction. The results of this study would be able to provide some insights to the education provider on the quality of the e-modules from the instructional design perspective.

Keywords: *Open and Distance Learning, Module, Instructional Design*

INTRODUCTION

Open University Malaysia was established with the vision of providing higher education using the latest Internet technology thereby allowing access to education for all. OUM is a private education provider and plays a vital role in encouraging innovation in delivery, assessment methods and curricular in higher education. Indeed, OUM is the first ODL (Open Distance Learning) institution in Malaysia that was set up in 2000 to fulfil the nation's aspiration to increase education opportunities for the people especially among working adults. Through the years, ICT and ODL have become synonymous with the way OUM delivers its programmes (UNESCO, 2002); indeed for OUM students Internet technology has increasingly become an inseparable component of learning and delivering of educational materials for OUM's students (Abu Zarin, et. al, 2008). Based on its blended pedagogy, this allows for limited

sessions of face-to-face tutorials with online learning materials as inputs alongside online coaching and forum discussions. In other words, its pedagogy is premised on self-managed learning (80%), face-to-face interaction (8%) and online learning (12%) (Abas. et al, 2008). While e-learning allows for freedom in self-learning, it requires much discipline and perseverance and from experience the institution has observed, this only strengthens a student's will-power to succeed and to achieve future advancement in his career. Certainly, this makes learning via OUM's methods a dualistic achievement – obtaining a degree (knowledge) and character building. Over the years, the University has developed and fine-tuned its web-education taking advantage of the rapid technological advances occurring globally. Self-managed learning carries the highest weightage of the teaching and learning process in OUM when teaching and learning through distance education can be challenging for both the educator and the learner. The challenges are further intensified for quantitative courses such as Mathematics, Accounting, Finance and Economics. In conventional settings, learning occurs during classroom activities whereby learners do hands-on exercises, trial-and-error practices, and obtain on-the-spot feedback from their teachers throughout the course. Distant learners, on the other hand, mainly struggle through these courses in isolation. The majority of OUM learners comprise working adults who may have left school for a number of years and has now returned to pursue higher education. Distance learners have different prior learning experiences, learning styles, preferences and coping strategies. Taking into consideration the unique characteristics of this group of learners, additional support must be provided to help them cope with the current demands of academia apart from developing learners' interest, motivation and understanding for a course.

These differences are important and must be addressed to meet the learners' diverse needs, and to improve the educational experience of distance learning. Although these differences are sometimes treated as marginal or remedial in conventional settings, they are central to distance learners. Learners who are actively engaged in the learning process and sufficiently supported will be more likely to achieve success. Learners who are dynamically occupied in their own learning will begin to feel empowered. They will be able to take charge of their learning, and as a result, their individual achievement and self-direction will rise. On the other hand, the opposite will be true for learners who do not have the 'right' skills, mindset and perspectives on distance learning, and whose problems may be worsened by lack of support from their respective distance learning tutors and institutions.

There is a total of 2,431 e-modules developed to date in OUM for all clusters; Cluster of Education and Social Sciences, Cluster of Business and Management as well as Cluster of Applied Sciences. The Centre for Instructional Design and Technology (CiDT) plays a vital role in the development of these e-modules from the instructional design aspect. This study attempts to discuss three-modules in ten dimensions from the instructional design perspective encompassing areas such as the design, formatting, self-check and activity questions, organisation of the content, ease of reading, graphics as well as overall satisfaction. The results of this study would be able to provide some insights to the education provider on the quality of the e-modules from the instructional design perspective.

LITERATURE REVIEW

As an ODL university, OUM has developed a unique system for teaching and learning online. This system enables learners and tutors to interact online where courses and discussions are delivered and carried out digitally. This type of e-learning management system is aptly called My Inspire (myINSPIRE). myINSPIRE allows the integration of various features such as instructors' and students' tools, technical support, administrative tools and functions thereby facilitating the teaching and learning process.

The main challenge for ODL providers is to design and offer distance educational experience that encourages learning to its learners with vast backgrounds. As such, ODL providers need to ensure that its educational products and services are providing appropriate support and an encouraging learning experience to the learners. In order to achieve this aim, there are many factors that need to be considered in developing and delivering the courses. The provision of learning materials as a tool of support for

the learners by the institution is particularly important because many ODL learners are now “faced with a new learning environment and the expectation that they will have independent learning skills and the capacity to engage in activities that require self-direction and self-management of learning” (McLoughlin and Marshall, 2000).

Malaysian ODL learners who have journeyed through 12 years of primary and secondary education (mainstream education) may not have an appropriate educational concept of ODL learning. Their educational experience and learning expectations could be very teacher-centred, and their learning is characterised by dependency on teachers as knowledge providers. Their transition into becoming DLs may not be an easy one (Saw et al., 1999). In other words, every learner, every institution, every curriculum is unique and each exhibit different strengths and weaknesses. Their diversity in age, educational background and working experience only magnifies the fact that each learner could be similar to or vastly different from other distance learners. OUM’s module are being enhanced from time to time in terms of its content as well as the instructional design in order to keep abreast with the latest content and the to keep the design fresh and new. Nevertheless, there is no short of challenges faced to achieve all this and this paper serves to study the feedback from its learners for its design concept for the learning modules used in various clusters.

According to Dzakiria (2005), a learner who has left the educational setting for many years may feel incompetent and lacking in the learning skills needed to compete with other learners. The development of educational technology and the use of a wide range of media in ODL may add on to the ‘complexity’ of becoming a distance learner. In the present generation of ODL, learners are required to engage in ‘new’ ways of learning. To some students this new way of learning is accepted and does not impede learning. But to others, distance learning is ‘not just a plea for knowledge’, but a plea for continuous ‘presence’ of the teacher for learning to take place. Within the Malaysian context of distance education, the notion that ‘the teacher is always there, but isn’t’ in distance learning is a significant reality. Findings shared in this paper for example suggest that the infrequent face-to-face (F2F) meetings between distance education tutors and learners, and learners’ dependency on their tutors, cause frustrations and sometimes impede the learning process. Most ODL learners are not able to cope with distance learning expectations. They find that the new ways of learning and the sets of expectations that go with it too great. In such circumstances, some learners expect distance learning tutors to play an important role in helping them come to terms with the new ways of learning.

METHODOLOGY

A survey with the use of an online questionnaire was used for this study. A total of 238 and 488 learners’ feedbacks were recorded and collected for the January and May 2018 semesters. There is a total of 2,431 e-modules developed in OUM with academic clusters and CiDT plays a vital role in the development of the e-modules in particular the instructional design aspect which encompass the six major processes after the raw content has been screened for plagiarism, moderated and approved by the clusters. These processes encompass instructional design (ID), language editing (E), graphic design (GD), desktop publishing (DTP), internal review (IR), and quality control (QC). Upon completion of these processes, the e-modules are sent to the clusters for review and sign-off. Upon sign-off, amendments are done (if required) before CiDT chunks the e-module and upload them to myINSPIRE.

Table 1 shows the nine questions in the questionnaire which used the 5-point Likert-scale. This paper focuses on the instructional design perspective with the following considerations:

- Overall design
- Formatting
- Alignment of components within the e-module (learning outcomes, content, self-check and activity questions, and summary)

- Sufficient number of self-check and activity questions
- Helpfulness of the self-check and activity questions
- Systematic organisation of content (easy to difficult, concrete to abstract).
- Ease of reading
- Graphics / illustrations enhance learning
- Overall satisfaction

The questionnaires were created using Google Forms and then posted online on OUM’s myINSPIRE platform for access by OUM students. The feedback was collected over the course of two consecutive semesters – January 2018 semester (collected from 6 December 2017 to 10 April 2018) and May 2018 semester (collected from 11 April 2018 to 30 August 2018).

Table 1: Questions in the Questionnaire

Question	Descriptions
Q1	The overall design of the module was attractive.
Q2	The formatting of the module was well laid out.
Q3	The learning outcomes, content, Self-check and Activity questions and summary in each topic were well aligned to enhance understanding.
Q4	There were sufficient numbers of Self-Check and Activity questions in the module.
Q5	The Self-check and Activity questions were helpful.
Q6	The content was systematically organised to facilitate my learning (from easy to difficult, concrete to abstract).
Q7	The module was easy to read.
Q8	The graphics and illustrations were effective in enhancing learning
Q1-8	Average rating of the instructional design (ID) elements (covered by questions 1 to 8) in the module
Q9	My overall satisfaction rating of this module is:

FINDINGS AND DISCUSSION

For January 2018 semester, a total of 238 responses were received from the learners. A relatively positive feedback was received for the average rating on instructional design elements and overall satisfaction rating for the e-modules although they fell slightly below the targeted satisfaction of 80%.

- The average rating for instructional design elements in the module is 76.85% (below targeted 80% satisfaction by 3.78%).
- The overall satisfaction rating for modules: 76.22% (below targeted 80% satisfaction by 3.78%).

Meanwhile, the highest rating received is for Q5 regarding the helpfulness of the self-check and activity questions with a rating of 78.4%. Nevertheless, there are several areas of concern that can be improved (Refer to Table 2).

Table 2: Instructional Design Areas of Concern

Question	Descriptions	Average Rating
Q4	There were sufficient numbers of Self-Check and Activity questions in the module.	(75.8%)
Q6	The content was systematically organised to facilitate my learning (from easy to difficult, concrete to abstract).	(75.8%)
Q8	The graphics and illustrations were effective in enhancing learning.	(76.05%)

Refer to Figure 1 for the average ratings for each question.

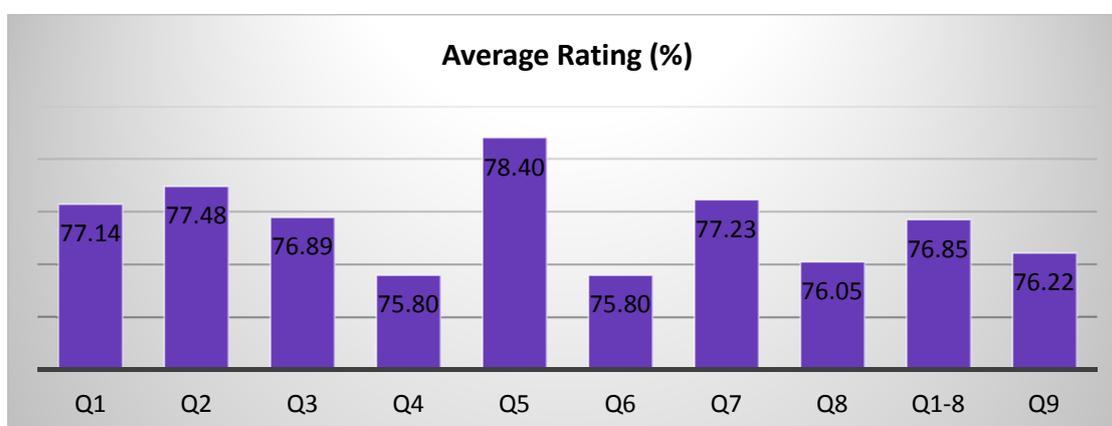


Figure 1: Average ratings for each question for January 2018 semester

As for May 2018 semester, a total of 488 responses were received from the learners. A significantly improved positive feedback was received pertaining to the ratings for the e-modules with average ratings slightly above the targeted satisfaction of 80% as detailed in the following:

- The average rating for instructional design elements in the module is 80.88% (above targeted 80% satisfaction by 0.88%).
- The overall satisfaction rating for modules: 80.41% (above targeted 80% satisfaction by 0.41%).

Meanwhile, the highest rating received for May 2018 semester are for Q2 on the formatting of the e-module and Q8 on the effectiveness of the graphics and illustrations with ratings of 81.6% and 81.52% respectively. Nevertheless, the areas of concern for three-modules are Q4 pertaining to the sufficiency of the number of self-check and activity questions; and Q7 on the ease of reading with 79.51% and 80.37% respectively. Refer to Figure 3 for the comparison of average ratings for each question for January and May 2018 semesters. The feedbacks from its learners are positive compared between January and May 2018 semester. The reasons for this positive feedback may be due to the use of simple and clear design for the modules with clearer and better arrangements of its contents and explanations. The uses of graphic visuals are a forte as well, as adult learners tend to learn better and faster with the aid of graphic illustrations and examples provided.

Comparison of Average Ratings by Semester (%)

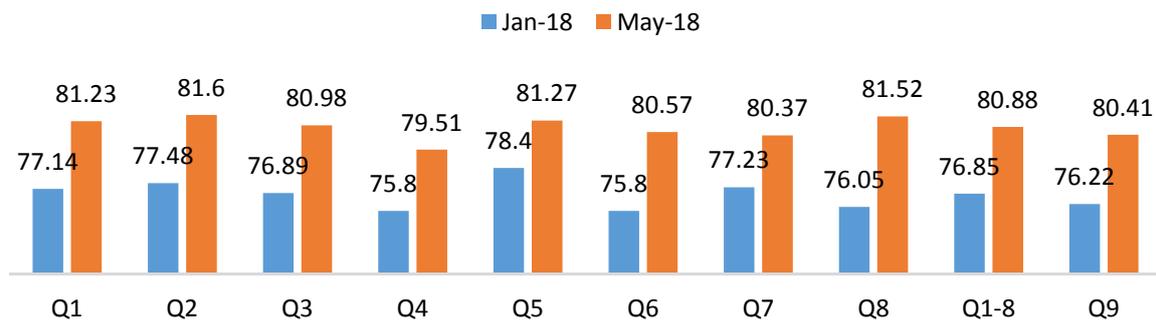


Figure 3: Comparison of average ratings for each question for January and May 2018 semesters

CONCLUSION

The widespread demand for higher education is intensified with globalisation, increasing mobility and democratisation of education. All over the world, people are free to choose where, how, what and when to pursue their studies. The challenge of competition for students comes not only from within the shores of the nation, but globally where similar offerings can be obtained too. The challenge for transparency and the adherence to generally understood and accepted norms of quality will be the deciding factor in inducing more people to choose that particular institution of higher learning to continue with their education. Basically, universities are expected to respond to the demands from the labour market for quality graduates, which mean that they must be publicly prepared to be scrutinised in terms of their lecturers, services and facilities.

The design seems trivial but using the right visual to attract the learners' attention and to pique their interest is as important equally. The results of this paper will be able to highlight on the path that CiDT has been taking or doing, with positive feedback indicating moving the right path. Nevertheless, much effort and keeping alert with the current needs on the design to ease learning and managed to capture the learners' attention to important contents and exercises are vital.

The reasons for the significant increase in the overall rating for instructional design and overall rating for the e-module may be due to the effort of continuous improvement and enhancement of the modules. This shows that CiDT has been taking the right action and path in its instructional design for the modules. However, there are still areas that can be further improved such as the arrangement of the content and the graphics and illustrations for the e-modules. There are several further studies that can be explored particularly on the ratings for the e-modules based on clusters, the nature of the course etc. A continued research on distance learning is essential. This study offers research potential regarding learning support in distance education. In designing the learning support, this paper wishes to encourage the ODL providers to choose appropriate combinations of methods for particular learning contexts. ODL providers need to realise the importance of their role in providing learning support in distance learning and, more importantly, to stimulate thought, dialogue, and future research in providing learning support to ODL programmes and courses to its learners.

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CYBERSAFETY IN EDUCATION FOR THE 21ST CENTURY: A COMPARATIVE STUDY OF MALAYSIA AND THAILAND

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ABSTRACT

Education for the 21st Century must recognise cybersafety issues faced by students in schools. Cybersecurity threats are everywhere and students must be able to cope with an environment where cyber threats and risks persist. What are these threats and risks and how do students in Malaysia and Thailand handle them? This paper attempts to compare and contrast cybersafety issues among school students in Malaysia and Thailand. The sample for this survey comprised 1,896 students from Malaysia and 1,336 students from Thailand. The quantitative research approach was used to explore and confirm relationship among variables. Four important factors influencing cybersafety among students in Malaysia comprise i. availability of help through significant others, parents and teachers (including counsellors), ii. accessing negative sites, iii. tendency to hide things from parents, and iv. feeling of discomfort when surfing negative sites. On the other hand, factors in Thailand include: i. ready availability of help if bullied or proper avenues are available, ii. victim of cyberbullying, iii. experiences of cyberbullying, and iv. experiences with accessing negative websites. The findings showed high construct reliability and high construct validity which was confirmed through Structural Equation Modeling. The study showed that Malaysia and Thailand's cybersafety issues differed significantly ($p < .05$) in 6 constructs, i.e. i. existence of problematic situations or negative experiences, ii. peer pressure, iii. parent-children gap, iv. sexting, v. cyber-bullying, and vi. dealing with negative experience or mediation strategies. The study recommended the following: i. parents in both Malaysia and Thailand should play a pivotal role in their children's well-being in cybersafety issues, ii. Malaysia and Thailand should develop local-based strategies to suit local contexts in cybersafety issues, and iii. overcoming new cyber risks in Malaysia and Thailand should follow best practices in other countries which have successfully overcome them.

Keywords: *Cybersafety, Cybersecurity, Cyberbullying*

INTRODUCTION

Cybersafety is a contemporary issue which needs to be studied in depth as research indicates the existence of cyberbullying among school children. The proliferation of internet use in education is a result of democratisation in online access to teaching and learning. Practically all schools now have access to the internet where teachers and students undertake lessons either synchronously or asynchronously. Learning can also take place ubiquitously. Learning in the 21st century must take into consideration cybersecurity issues, particularly cybersafety. In the case of Malaysia and Thailand, all schools have internet connectivity and there are many web-based applications in use for teaching and learning. In Malaysia, all schools, whether urban or rural have access to the Frog Virtual Learning Environment (VLE). Students and teachers can now gain access in a borderless environment within and outside the school via this platform. Being able to do this means that students operate in an “open environment” and this can expose them to cyber threats, cyber frauds and other cyber security issues. The question is “How do our students confront these problems?” This study attempts to look into students’ action as a result of internet use related to cyberbullying and cybersafety concerns. It compares these issues among school students in Malaysia and Thailand – their habits and how they carry themselves when confronted with problematic situations while surfing the internet. Cybersafety in this study refers to keeping information safe and secure and being responsible for one’s action online. Cyber threats would include stalking, child pornography, identity theft, bullying, data theft, and data mining which could cause problems to our school students. Computers enable child predators, pornographers, identity thieves, bullies, stalkers, and other computer-assisted criminals to operate more openly (Galicki, Havens, & Pelker, 2014).

CYBERSAFETY AND SCHOOL CHILDREN

Malaysia and Thailand have been consistently looking into ways to improve cybersafety in schools. In the case of Thailand, national laws have been passed to ensure children surf the web in a safe manner. A cyber security law was recently enacted in Thailand to give agencies sweeping powers to spy on internet traffic, order the removal of contents, or even seize computers without judicial oversight (The Straits Times, 16 November 2018). In the case of Malaysia, many initiatives have been put in place by the Ministry of Education (MOE) in collaboration with the private sector to promote cybersafety in schools. The Digi CyberSafe Programme is an initiative of Digi Telecommunications Malaysia and MOE to ensure that children use the internet in a safe environment. This is a proactive initiative to raise awareness and engage various communities on the subject. This study is a result of such an initiative.

The governments of both Malaysia and Thailand have ensured that all schools have internet access to facilitate school administration, teaching and learning. Malaysia has gone one step ahead in introducing the Frog VLE where teachers can teach using this platform and students can learn via this system during and after school hours. This has resulted in an open-access system where students can be on their own during computer lab lessons and after school hours.

Parents play an important role in guiding their children identify contents which are appropriate for their needs. As students spend most of the time at home, the home environment acts to develop a culture where students know how to handle things when confronted with cyber threats. In both Malaysia and Thailand, parental supervision can lead to the development of appropriate behavior and decorum in internet etiquette. This etiquette if not nurtured properly will pose problems later on and will have a bearing on how students develop in their adult life.

BACKGROUND TO THE STUDY

For the purpose of comparison in this study, only schools around Kuala Lumpur and its peripheral areas were used. This would match the type of schools in Thailand where only Bangkok schools and its peripheral areas were included. This study attempts to answer three research questions: i. What are the indicators of cyberbullying in Malaysia and Thailand? ii. Are there differences in these indicators between Malaysia and Thailand? and iii. What are the factors which influence cybersafety in Malaysia and Thailand?

THE RESEARCH PROBLEM

Cybersafety is a major concern in both Malaysia and Thailand. Attempts have been made by the Ministries of Education in both countries to reduce cyberbullying. Findings from the Digi Yellow Heart Cyberbullying and Youth Disposition Survey 2018 (Kuldip, Soon & Ling, 2018) show that 20.5% of respondents comprising students from schools and colleges indicated that they had been bullied online. From another perspective, the same study also shows that 42.1% of the respondents knew of someone who had been bullied online. This shows some concern on cyberbullying among Malaysian students. A joint study by CyberSecurity Malaysia and Digi Cybersafe's Stop Cyberbullying in 2017 found that 58% of the respondents experienced cyberbullying on social media or chat apps and 75% had received nasty messages in multi-player online games. In Thailand, a study conducted by Sittichai (2014) attempted to classify cyberbullying into traditional and cyber victimisation. This study found between 3.7% and 6% of students had been cyberbullied based on a strict criterion classification, and that 15% and 16% respectively were based on a more lenient criterion.

Cyberbullying could be the result of the use of social media such as Facebook, YouTube, Twitter, LinkedIn, Skype, Instagram, Pinterest, Tumblr, Google+ and others. Cyberbully actions were deemed threatening and dangerous and were damaging to the students (Hollandsworth, Dowdy, & Donovan, 2011). Smith et al. (2008) defines cyberbullying as: "An aggressive, intentional act carried out by a group or individual, using electronic forms of contact, repeatedly and over time against a victim who cannot easily defend himself or herself." There is a need to educate students about the effects of this unethical behaviour (Oxley, 2011). While the goal is to educate children in making responsible decisions using social media and other aspects of the internet, there is still a need for parents to supervise their children wherever possible. While creating some control mechanism on internet use may be ideal, teaching digital citizenship will deliver the skills and tools students need to communicate in a global society using 21st Century means.

BRIEF REVIEW OF LITERATURE ON CYBERSAFETY

A quick look at the current literature shows that cybersafety is a concern of many governments. Today, students literally have the world at their fingertips, and they must be taught how to behave, react, and interact in a fast paced cyber-world (Oxley, 2011). Technology has changed the way information is received and understood. "Responsible and ethical use of the Internet is not something that children or teenagers, in particular, consider to be important and serious consequences are beginning to emerge as a result of careless and offensive online behaviour" (Oxley, 2011). Students not only need a set of rules, but they need to understand the basis for these rules and be able to apply what the rules say to different situations they may encounter (Oxley, 2011). In addition, students must be informed about ethics.

The International Society for Technology in Education (ISTE) created the National Educational Technology Standards (NETS) for administrators, teachers and students. These are known as ISTE Standards – S, ISTE Standards – T and ISTE Standards – A (ISTE, 2015). These standards address the ethical use of the internet for students, teachers, and administrators. Students are posting and behaving inappropriately online; believing they are completely anonymous. In fact, anything posted can become

viral in a matter of hours, making personal information and data available to thousands of people is one thing that is not considered by many (Oxley, 2011). In Thailand, a proposed cybersecurity law would give the government sweeping powers to control cybersafety issues such as blocking websites and using defamation laws to prosecute critics (Channel News Asia, 16 November 2016). In Malaysia, the government in collaboration with Cyber Security Malaysia has produced a guide book which helps parents identify cyber threats.

RESEARCH METHODOLOGY

The survey research design was used for this study. Quantitative data were collected using a sample of 3,232 school students, i.e. comprising 1,896 (58.7%) students from Malaysia and 1,336 (41.3%) from Thailand. The items in the questionnaire were developed using a 5-point Likert-type rating scale. Data were analysed using SPSS Statistics and SPSS AMOS. Among the statistical measures included descriptive statistics, t-tests, factor analysis and goodness-of-fit Structural Equation Modeling (SEM) statistics. T-tests were used to compute differences in findings between Malaysia and Thailand while factor analysis was used to determine the factors using the Principal Component Method (PCM). These were then confirmed using SEM analysis to show goodness-of-fit in the measurement model. A reliability analysis was also undertaken to determine the internal consistency of the principal components generated via PCM and then confirmed using the Goodness-of-Fit index, Comparative Fit Index, and Root Mean Square Error of Approximation. The findings showed good construct validity of the principal components with Cronbach alpha values for the components having values greater than 0.7.

FINDINGS FROM THIS STUDY

Table 1 shows the distribution of gender by country. Of the total sample of 3,168 respondents, 1,874 (59.2%) of the students were male and 1,294 (40.8%) were female. The gender distribution of Malaysia was quite evenly represented, i.e. 50.2% (952) male and 49.8% (944) female. On the other hand, Thailand had a predominance of male respondents with a sample of 72.5% (922) male and 27.5% (350) female.

Table 1: Distribution by Country and Gender

Gender			Country		Total
			Malaysia	Thailand	
Gender	Male	Count	952	922	1874
		% within country	50.2%	72.5%	59.2%
	Female	Count	944	350	1294
		% within Country	49.8%	27.5%	40.8%
Total		Count	1896	1272	3168
		% within Country	100.0%	100.0%	100.0%

Internet Use

As internet use has a direct bearing on cybersafety issues, the findings show very high regular internet use among respondents, i.e. 95.7% of students in Thailand and 94.8% in Malaysia (see Table 2). The high percentage of students using internet indicates high penetration of internet connectivity in schools and at home.

Table 2: Internet Use among Students

Internet Use		Country		Total	
		Malaysia	Thailand		
Do you use the internet?	Yes	Count	1798	1213	3011
		% within Country	94.8%	95.7%	95.2%
	No	Count	98	54	152
		% within Country	5.2%	4.3%	4.8%
Total		Count	1896	1267	3163
		% within Country	100.0%	100.0%	100.0%

Cyber Safety Issues

Findings from the seven constructs of this study as rated by students share many common issues between Malaysia and Thailand. The constructs in this study are as follows:

- Construct 1: Problematic situations and negative experiences
- Construct 2: Peer pressure
- Construct 3: Parent-children gap
- Construct 4: Sexting
- Construct 5: Cyberbullying
- Construct 6: Dealing with negative experience / mediation strategies
- Construct 7: New risks

The mean ratings of the seven constructs are shown in Table 3 and their differences by country are shown in Table 4. For Construct 1, Malaysian students rated with an overall mean of 2.57 (S.D.= .561; n = 1,896) and Thailand recorded a lower mean rating of 2.20 (S.D. = .621; n = 1,272). All the constructs, i.e. Construct 1 to Construct 6 show significant differences in the mean ratings between Malaysia and Thailand ($p < .05$). However, findings showed no significant difference in the perceptions of students with regard to Construct 7, i.e. New risks ($p > .05$). From the mean output, Malaysian students recorded a higher mean rating for Construct 1, Construct 2, Construct 3, Construct 4, Construct 6 and Construct 7. However, Thailand had a higher mean rating for Construct 5 on Sexting (see Table 3).

What could be the possible causes of these significant differences in the mean ratings? In the case of Malaysia, students had been exposed to the special programmes by Cyber Security Malaysia, Digi Telecommunications and teachers on the dangers of web-surfing through the many smart partnership programmes undertaken by the Ministry of Education and Internet Service Providers. Many activities such as cyber security talks had been initiated with school teachers and students on the dangers of free association and the correct approaches to be carried out when assessing websites of dubious origins. Thailand had a lower mean rating, meaning students tended to rate low on the items in Construct 1, thereby having the tendency to disagree on the various aspects highlighted in the questionnaire. The items provided a listing of the “dangers” of different types of negative situations prevalent in the internet. Could this mean that students in Thailand were less exposed to the remedial measures when

confronted with problematic situations? All these could be answered through a more comprehensive examination of the prevailing situations in the respective countries.

Table 3: Descriptive Group Statistics

	Country	N	Mean	Std. Deviation	Std. Error Mean
Construct 1: Problematic Situations & Negative Experiences	Malaysia	1896	2.5699	.56142	.01289
	Thailand	1336	2.1928	.63042	.01725
Construct 2: Peer Pressure	Malaysia	1896	1.9364	.82275	.01890
	Thailand	1333	1.7832	.87447	.02395
Construct 3: Parent-Children Gap	Malaysia	1896	2.6638	.55075	.01265
	Thailand	1336	2.2440	.60710	.01661
Construct 4: Sexting	Malaysia	1896	1.5203	.79293	.01821
	Thailand	1332	1.6655	.89692	.02458
Construct 5: Cyberbullying	Malaysia	1896	1.8754	.82257	.01889
	Thailand	1333	1.6382	.81025	.02219
Construct 6: Dealing with Negative Experience / Mediation Strategies	Malaysia	1896	3.3615	.53641	.01232
	Thailand	1336	2.9285	.87415	.02392
Construct 7: New Risks	Malaysia	1896	1.7324	.71505	.01642
	Thailand	1336	1.7194	.66998	.01833

Table 4: Differences in Malaysia and Thailand Ratings Based on Constructs

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Construct 1: Problematic Situations and Negative Experiences	Equal variances assumed	17.663	.000	17.865	3230	.000	.37709	.02111
	Equal variances not assumed			17.511	2658.995	.000	.37709	.02153
Construct 2: Peer Pressure	Equal variances assumed	11.271	.001	5.074	3227	.000	.15316	.03018
	Equal variances not assumed			5.021	2755.656	.000	.15316	.03051
Construct 3: Parent-Children Gap	Equal variances assumed	16.586	.000	20.448	3230	.000	.41978	.02053
	Equal variances not assumed			20.107	2694.047	.000	.41978	.02088

Construct 4: Sexting	Equal variances assumed	28.617	.000	-4.851	3226	.000	-.14523	.02994
	Equal variances not assumed			-4.748	2635.771	.000	-.14523	.03059
Construct 5: Cyberbullying	Equal variances assumed	1.937	.164	8.117	3227	.000	.23719	.02922
	Equal variances not assumed			8.139	2893.745	.000	.23719	.02914
Construct 6: Dealing with Negative Experience / Mediation Strategies	Equal variances assumed	346.166	.000	17.413	3230	.000	.43300	.02487
	Equal variances not assumed			16.096	2036.434	.000	.43300	.02690
Construct 7: New Risks	Equal variances assumed	17.497	.000	.523	3230	.601	.01302	.02489
	Equal variances not assumed			.529	2983.863	.597	.01302	.02461

Construct 7 concerns “New Risks” such as those associated with drugs, hate sites, weapons, and suicide. In this regard, the findings show a general disagreement on the accessibility factor, meaning students in Malaysia and Thailand avoided these sites. Thailand had a slightly lower mean (mean = 1.72; S.D. = .670) as compared to Malaysia (mean = 1.73; S.D. = .715) (see Table 3). The implication of this construct is that on the whole, students in Malaysia and Thailand were well-prepared to face new risks as a result of new developments and new issues taking place. These issues were negative in nature and the relatively low mean ratings seemed to indicate a high level of awareness among students. This could be probably due to effective programmes in schools or a sense of awareness by parents and teachers or a tendency to be cautious when confronted with risks deemed against norms or decency.

On the issue of gender differences, findings on cyberbullying varied between male and female students. Table 5 shows the mean ratings of the 7 constructs. Male students tended to rate higher for Construct 2, Construct 4, Construct 5 and Construct 7 while female students tended to rate higher for Construct 1, Construct 3, and Construct 6. Higher ratings would mean respondents agreeing to the items which made up those constructs. This shows a generally higher agreement for male students on peer pressure, sexting, cyberbullying and new risks while female students generally agreed higher on negative experiences, parent-children gap and mediation strategies. These findings were found to be aligned with the varied nature of research based on gender (Tokunaga, 2010). For example, in the research conducted by Fanti, Demetriou & Hawa (2012) and Salmivalli & Pöyhönen (2012) boys tended to be more involved than girls in cyberbullying issues. On the other hand, studies by Smith et al., 2008; Livingstone and Haddon, Görzing & Ólafsson, 2011 showed little gender differences.

Table 5: Perceptions of Constructs by Gender and Country

Gender	Country		Construct 1: Problematic Situations & Negative Experiences	Construct 2: Peer Pressure	Construct 3: Parent-Children Gap	Construct 4: Sexting	Construct 5: Cyberbullying	Construct 6: Dealing with Negative Experience / Mediation Strategies	Construct 7: New Risks
Male	Malaysia	Mean	2.6151	2.1166	2.6996	1.6408	1.9335	3.3116	1.8312
		N	952	952	952	952	952	952	952
		S.D	.56272	.82691	.57644	.85680	.84946	.56025	.75625
	Thailand	Mean	2.2132	1.8322	2.2417	1.6641	1.6605	2.9006	1.7622
		N	922	921	922	920	920	922	922
		S.D	.62047	.90172	.61971	.92435	.85563	.89112	.70804
	Total	Mean	2.4173	1.9768	2.4743	1.6522	1.7993	3.1094	1.7973
		N	1874	1873	1874	1872	1872	1874	1874
		S.D	.62488	.87590	.64030	.89048	.86313	.76947	.73354
Female	Malaysia	Mean	2.5244	1.7546	2.6277	1.3988	1.8167	3.4118	1.6328
		N	944	944	944	944	944	944	944
		S.D	.55671	.77772	.52139	.70266	.79067	.50659	.65645
	Thailand	Mean	2.1492	1.6543	2.2519	1.6361	1.5645	2.9940	1.6049
		N	350	349	350	349	349	350	350
		S.D	.62048	.77094	.56629	.79832	.66504	.81554	.55734
	Total	Mean	2.4229	1.7275	2.5261	1.4629	1.7486	3.2988	1.6252
		N	1294	1293	1294	1293	1293	1294	1294
		S.D	.59812	.77688	.55921	.73697	.76679	.63337	.63109
Total	Malaysia	Mean	2.5699	1.9364	2.6638	1.5203	1.8754	3.3615	1.7324
		N	1896	1896	1896	1896	1896	1896	1896
		S.D	.56142	.82275	.55075	.79293	.82257	.53641	.71505
	Thailand	Mean	2.1956	1.7833	2.2445	1.6564	1.6341	2.9263	1.7189
		N	1272	1270	1272	1269	1269	1272	1272
		S.D	.62088	.87109	.60528	.89125	.80859	.87166	.67343
	Total	Mean	2.4196	1.8750	2.4954	1.5749	1.7786	3.1868	1.7270
		N	3168	3166	3168	3165	3165	3168	3168
		S.D	.61400	.84567	.60893	.83627	.82538	.72292	.69856

Factors Influencing Cybersafety

All the rating scale items in the questionnaire were factor-analyse using the Principal Component Method (PCM) to determine important components or factors which influence cybersafety. The outputs in Table 6 and Table 7 show the salient rating components from students in Malaysia and Thailand respectively. The findings show many similarities for PCM analysis.

Factors Influencing Malaysian Cybersafety

Four factors emerged from the study, these are: Factor 1: Availability of help through significant others, parents and teachers (including counsellors), ii. Factor 2: Accessing negative sites, iii. Tendency to hide things from parents, and iv. Feeling of discomfort when surfing negative sites. Factor 1 contributes the higher percentage to the variance (see Table 6).

Table 6: Factors Influencing Cybersafety among Malaysian Students

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
Factor 1	7.868	16.391	16.391
Factor 2	3.909	8.143	24.534
Factor 3	2.615	5.448	29.981
Factor 4	1.666	3.471	33.452

Factors Influencing Thailand Cybersafety

For Thailand, four important factors influenced cybersafety among students. These are: Factor 1: Ready availability of help if bullied or proper avenues are available, Factor 2: Victim of cyberbullying, Factor 3: Experiences of cyberbullying, and Factor 4: Experiences with accessing negative websites (see Table 7).

Table 7: Factors Influencing Cybersafety among Thailand Students

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
Factor 1	7.746	16.136	16.136
Factor 2	6.092	12.692	28.828
Factor 3	2.792	5.816	34.644
Factor 4	1.762	3.671	38.315

Comparing the findings of Malaysia and Thailand students, it can be concluded that the first factor is similar in the sense that there were avenues to obtain help from friends, parents and teachers when cybersafety issues emerged. This is a positive development as agencies in both Malaysia and Thailand have been active in undertaking programmes by reducing cyberbullying among students.

Confirmatory Factor Analysis for Factors Influencing Cybersafety

The provide a confirmatory perspective to the above exploratory factors SEM analysis was used. The results showed a high level of model fit using path diagrams among the four factors for both Malaysia and Thailand. This would confirm the four factors and provide evidence of construct validity to the research undertaken.

Malaysia's Path Diagram

Figure 1 shows Malaysia's path diagram based on standardised estimates. The results show a good model fit of .935 for Goodness-of-Fit Index (GFI), .895 for Comparative Fit Index (CFI) and .052 for Root Mean Square Error of Approximation (RMSEA) for the Malaysian data. This indicates acceptable values in model fit and therefore it can be concluded that the four factors had relatively high and acceptable validity in the measurement model.

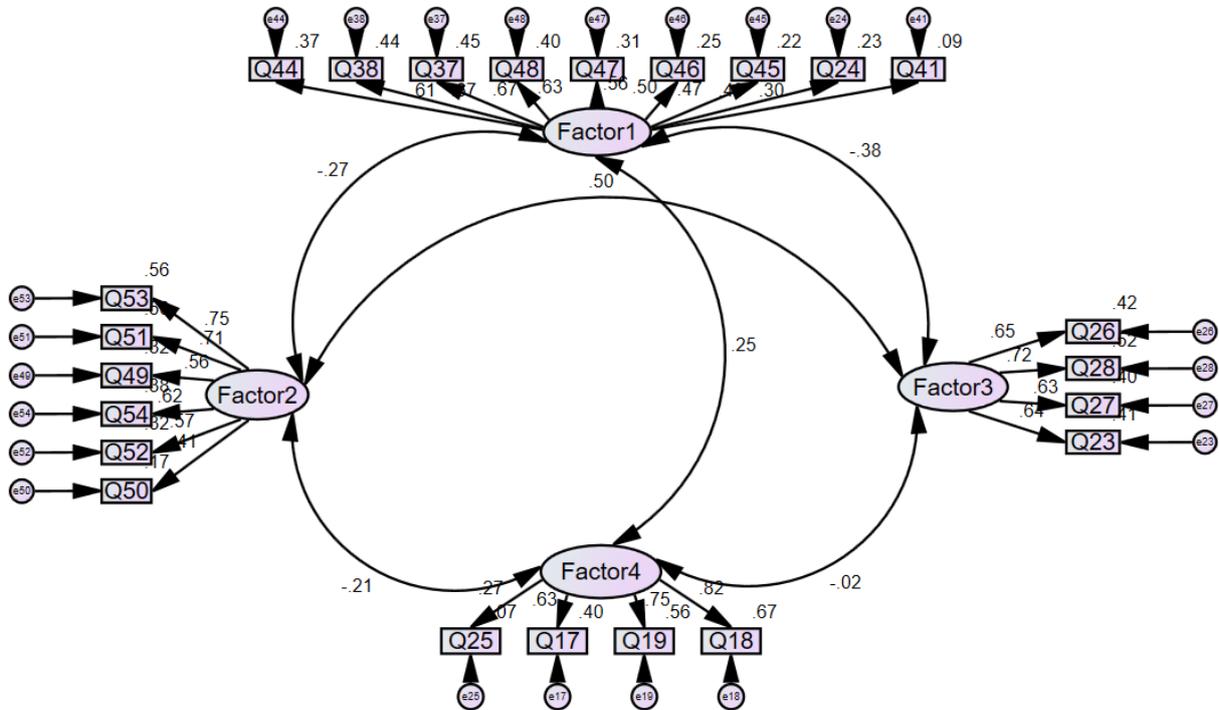


Figure 1: Path Diagram of Malaysia

Thailand's Path Diagram

For Thailand (see Figure 2), SEM analysis shows a GFI of .926, CFI of .917 and RMSEA of .047 indicating good measurement model and good construct validity for the four factors.

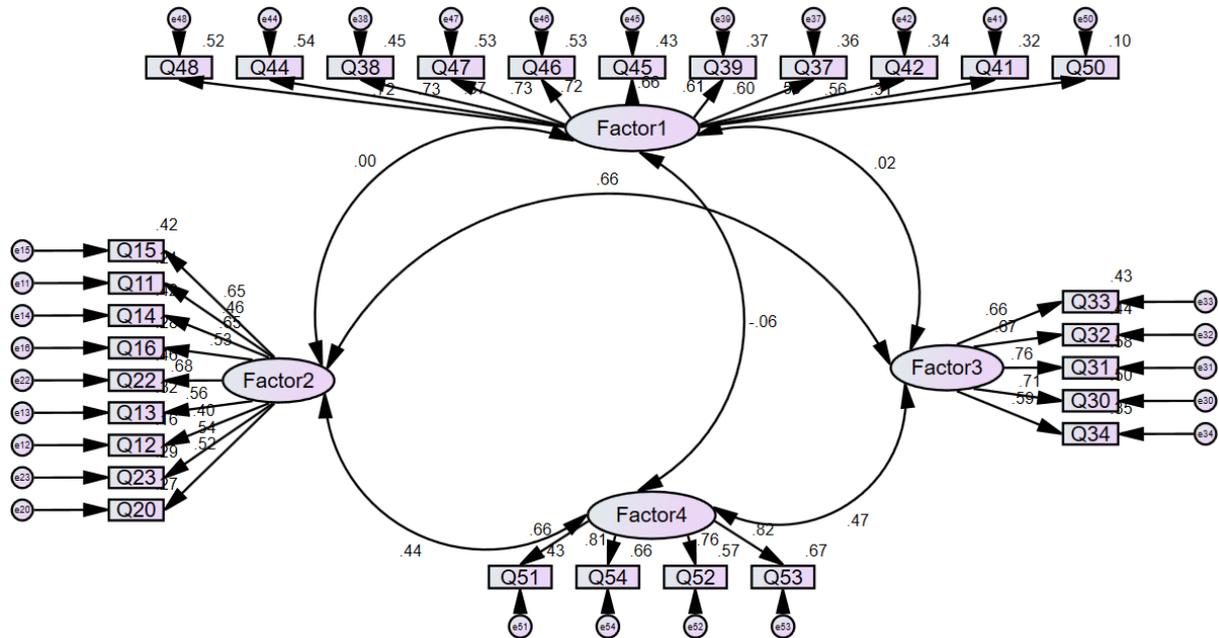


Figure 2: Path Diagram of Thailand

DISCUSSION

There are many similarities and differences on how students address cybersafety in Malaysia and Thailand. A very important similarity is that in both Malaysia and Thailand students have proper avenues to seek help when confronted with cybersafety issues. The schools have put in place teachers and counsellors who can provide assistance when required. As in the case of Malaysia, every school has counselling teachers ready to help students. To ensure the well-being of students, the school curriculum should teach digital citizenship with the aim of making students literate in not only understanding the do's and don'ts of things but also develop in them healthy attitude and behaviour when surfing the internet. Students need to know the proper ways to interact with others online – what is appropriate and what is not. Parental role is important. Parents should be aware of what the child is doing on the internet – what sites he is visiting and why. Teachers should always impart positive values and ethics to children under their care. They should model appropriate behaviours and encourage students to be good citizens of cyberspace. The study recommended the following: i. parents in both Malaysia and Thailand should play a pivotal role in their children's well-being in cybersafety issues, ii. Malaysia and Thailand should develop local-based strategies to suit local contexts in cybersafety issues, and iii. overcoming new cyber risks in Malaysia and Thailand should follow best practices in other countries who have successfully overcome them.

CONCLUSION

The evidence of this study shows significant differences between Malaysia and Thailand with regard to students' perceptions in 6 of the 7 constructs. The education system, management, and cultural environment in Malaysia and Thailand could have a bearing on how students perceive things. This study reveals one important factor – students practise self-control in both Malaysia and Thailand. The proliferation of internet use is unavoidable and there are existing “structures” which should be further strengthened to leverage on cyber security. There is a need to better monitor programmes which will have direct impact on the students' well-being.

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DOCUMENTS ORGANISATION STRATEGIES OF OPEN UNIVERSITY MALAYSIA (OUM) POSTGRADUATE STUDENTS

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ABSTRACT

Students doing research would normally download documents from the Internet on to their desktop for later use. However, these documents are not easily found again as the documents are saved indiscriminately in multiple folders on their desktop. This study aims to investigate students' document organisation strategies on their desktop primarily. The study includes 128 Open University Malaysia (OUM) postgraduate students with personal desktop of at least 10 Portable Documents Format (PDFs) files. Personal Information Management (PIM) is an interesting research field exploring individual's activities of acquisition, organisation, maintenance, retrieval and sharing of information (Lush, 2014). Research has shown that PIM activities have an important influence on the learning processes, particularly university students engaging in many documents from various sources (Jacques & Fastrez, 2014). Data regarding their personal desktop documents were collected using survey method. The questionnaire was administered using Google Form. Two distinct categories of students' organisation strategies were identified in this research, which are piling and filing. A discussion of these results is provided. We will then recommend personal information management organisation strategies for postgraduate students doing their research project. A proper information management organisation strategy will lead to the development of efficient information management skills of the student.

Keywords: Organisation Strategies, Personal Information Management

INTRODUCTION

Students doing research would normally download documents from the Internet on to their desktop for later use. However, these documents are not easily found again as the documents are saved indiscriminately in multiple folders. This study aims to investigate student document organisation strategies on their desktop primarily.

Background

Document management involves the process of accessing, managing and maintaining documents in a particular format (Bergman, Boardman, Gwizdka, & Jones, 2004). The most common document management system used by students on their desktops is the hierarchical folder system integrated within their computer operating system. A well-structured hierarchical structure can keep documents organised. Documents are stored in folders and sub-folders. A document can be found by accessing it through a particular path in the hierarchy.

However, this is not an ideal situation for most students, as they are unsure where the document is located as the documents are saved indiscriminately in multiple folders on their desktops. It takes a long time to retrieve a document that they had seen before, or they may not be able to find it in their desktop, and need to search for it on the internet all over again.

Personal Information Management (PIM) is an interesting research field exploring individual's activities of acquisition, organisation, maintenance, retrieval and sharing of documents (Lush, 2014). These PIM activities helps in understanding the students' personal document organisation strategies. Personal documents in this context means documents that have either been created by the students or documents that they have acquired for their research.

Therefore, it is necessary to research how students manage personal documents, and which PIM strategies (if any) they use in doing their research. This research leads to an organisation strategy that is useful in the development of efficient information management skills of the student.

RELATED WORK

To understand the nature of document management, we looked deeply into the literature of personal information management. Bergman, Boardman, Gwizdka and Jones (2004), have defined three main activities for Personal Information Management: keeping, finding/re-finding, and organising. All of these activities affects a different aspect of student's engagement with the documents. Keeping activities affect information input, whereas finding/re-finding activities affect information output. The activity that affects information storage includes information maintenance and organisation, which is the focus of this study.

When doing research, students create new documents, download journal papers in PDF, and manage other documents pertaining their research subject. As the cost and availability of mass storage devices is not an issue nowadays, students can store a lot of documents in their desktops, eventually exceeding their capacity to manage the documents effectively. This results in students having difficulties in the organisation of their documents, and also finding the document that they have seen before (Dumais, Cutrell, Cadiz, Jancke, Sarin & Robbins, 2003). These students now spend a lot of time searching for their document, navigating within their sub-folders (Fitchett, Cockburn & Gutwin, 2013).

Research has shown that PIM activities have an important influence on learning processes and particularly on university students who engage with many documents from various sources (Jacques & Fastrez, 2014). As individuals, improved PIM means better use of precious time (time, money, energy, attention), and in organisations, better PIM improves employee productivity, which leads to better teamwork.

Folder Hierarchies and Document Management

A document is a collection of data or programs stored under a single name, having a format (text, graphic image, audio etc.) and size. A folder or directory refers to a location in the operating system which contains a list of documents or subfolders. Usually a folder name describes the documents within it, and it may contain none for thousands of documents. The folder hierarchy is normally used for the organisation of personal documents in a computer desktop. The hierarchy allows users to create personal classification scheme that is based on their current research interest. For example, a student may create a folder called "literature notes", and another called "interesting". Only that student may have the idea of which document goes into which folder, and why. Also, the hierarchy method requires students to remember the category or location that the document is saved in. There are many studies done on the folder's role in document management (Barreau, & Nardi, 1995). These papers triggered further discussions on users' browsing and searching behaviour in the process of finding documents.

One of the strengths of the hierarchical folders and sub-folders is that students are familiar with it, as most operating systems including Microsoft Windows use the hierarchical file system to manage and organise documents. However, as soon as the number of folders and sub-folders increase, so does the task of managing the hierarchy (Fitchett, Cockburn & Gutwin, 2013). Despite its advantages, the hierarchical structure has some drawbacks, where the documents have to be maintained in order to make them relevant to the current need of the research, since the document may get outdated or irrelevant. PIM's activities of document organisation, maintenance and retrieval makes good sense in our research on document management as the problem of document management is essentially the problem of efficient organisation and effective re-finding (Teevan, 2007). In our study, we mainly focus on the process of document organisation using folders hierarchy.

Personal Information Management and Organisation

Personal documents navigation involves a two-phase process. Firstly, students manually traverse the organisational hierarchy until they reach the folder where the document is stored. Secondly, they locate the file within that folder (Bergman, Beyth-Marom, Nachmias, Gradovitch, & Whittaker, 2008). However, before the students can do this process, they will have to use organisational strategies to store the documents. Previous researches have indicated two main organisational strategies for PIM which is Piling and Filing (Malone, 1983), and is shared by other current researchers (Hardof-Jaffe, Hershkovitz, Abu-Kishk, Bergman, & Nachmias, 2009); (Trullemans, & Signer, 2014). Malone (1983) describes piling as documents heaped on top of each other in reverse chronological order, and this pile may or may not have classification or a label. The opposite is for filing, where documents are categorised and stored with labels. Malone (1983) found that piles are useful for smaller collections as the user could remember the location of the document in a certain pile, and document at the top of the pile would remind him/her of some associated task. However, when the piling gets larger, the user could not easily find the documents. Malone's finding of filers doing better than pilers in retrieving the document when the document is filed in folders and directories with labels describing their category, whereby the documents were piled in the My Documents or other such root directory.

PIM literacy (Mioduser, Nachmias, & Forkosh-Baruch, 2008) an integral and centric part of the students' learning process, and having an information archive, students can construct knowledge. This constructive learning approach emphasises to the fact that knowledge is constructed through a process in which students actively integrate new knowledge with previous knowledge (Brooks, & Brooks, 1993). During the process of information seeking, students need to have organisational skills such as naming, sorting and categorizing (Lansdale, 1988).

We start by describing the methodology used in our study and then present the results of the study. This is followed by a discussion of new opportunities and an outline of organisational strategies for postgraduate students at Open University Malaysia.

METHODOLOGY

In our research, we would like to investigate students' document organisation strategies in their desktops primarily by administering a questionnaire, and collecting the results. Our study method consists of an online questionnaire with 13 questions. This questionnaire was administered using Google Forms with the link to the online form sent through email to all students currently enrolled at Open University Malaysia in the Masters and PhD programmes. The participants of our research were informed that the collected data would be used for scientific research as well as in scientific publications. Furthermore, they were ensured that their data would be treated confidentially and be fully anonymised when used in publications.

Data Collection

For the purpose of this research, we have designed an online questionnaire which focuses on investigating students' document organisation strategies in their desktops primarily, especially on their document organisation structure and how they create and use folders. Our online survey allowed us to collect data anonymously from a large number of students currently doing their masters project and PhD research. There were 6 demographic questions which required them to choose an option from a few options provided. Apart from these demographic questions, the survey contained quantitative questions using a 5-point Likert scale. It is worth mentioning that some of the survey questions investigating document organisation and use of folders have already been identified by previous research. The survey conducted using Google Forms contained 3 groups of questions:

- (i) Questions related to a participant's demographic information such as the participants age, gender, postgraduate level, number of years using a computer, operating system used and how long they have started their research.
- (ii) Questions related to a participant's creation and use of folders.
- (iii) Questions related to a participant's document organisation structure.

In the questionnaire, participants are also asked questions regarding their organisation of documents and about creating and using folders. The questions are F1 to F4 for foldering and O1 to O3 for organisation.

Population

The link to the online survey was sent via email to students in the Open University Malaysia's Masters and PhD programmes. Given the focus of our research, we choose to recruit the participants from a population of postgraduate researchers as they represent a group of knowledge workers who frequently use documents and have been using the computer for more than 10 years. It is worth mentioning that other groups such as undergraduate students or staff at Open University Malaysia could also be considered as knowledge workers since they frequently use documents. However, we believe that postgraduate students are more engaged in associating information when reading and writing scientific articles. In total, 128 students completed the 10-minute survey in a span of 7 weeks. Our sample includes Master's students (n = 102), and PhD students (n = 26). The 128 participants consisted of 59 female and 69 male participants, with highest number of participants (n = 38) from the 36–40 age group. Most of the participants (n = 93) have been using the computer for more than 10 years. Participants using Microsoft Windows operating system (n = 118) far exceed the participants using Mac Os (n = 9) while one student is using other types of operating system. It was also important to know how long the participants have started their research to know how many document they would have accumulated. There are 29 participants who have started their research in the past 1–6 months, 62 participants in the 6 to 18 months and 37 participants for more than 18 months. Note that given the population, the results of our research might be generalised for the community of postgraduate students and not necessarily for other knowledge workers.

Data Analysis

The collected quantitative data was analysed using descriptive analysis in SPSS. Data analysis was done with the aim of investigating students' organisation strategies. Table 1 presents the categorisation to the participants as F1 and F2 as foldering and O1 and O2 as organisation.

Table 1: Categorisation of Questions to Participants

Question ID	Question	Category
F1	Folder names are easy to create.	FOLDERING
F2	It is easy to assign my files to the folders that I create.	
O1	I am satisfied with my document organisation structure.	ORGANISATION
O2	My files on the computer are well organised.	

RESULTS

This study aims to describe students’ document organisation strategies in their desktops primarily. We were able to collect information about the foldering and organisation students’ documents. In this section, we describe the descriptive statistics for the information gained in the questionnaire.

In the first question of the number of folders the students created in their computer related to the research, it was found the percentage of folders were highest for more than 5 which was 39.8, as well as the percentage of folders for 3 – 5 is also high which is 37.5.

The number of files in average a student keeps in the folder that is related to their research is also highest for more than 5, which is 66.4. The lowest percentage for files that are less than 3 per folder which is only 8.6.

When asked to describe where the students kept their documents, giving them three choices which are either to create a new folder, keep the files in the Desktop/ My Documents/ Download and existing folders, most (n = 79) of the students created new folders when saving their documents. This clearly relates to the filing organisational strategy used by the students.

Table 2: Document Organisation Strategies Descriptive Statistics

		Frequency	Percent
How many folders have you created in your computer related to your research?	0 - 2	29	22.7
	3 - 5	48	37.5
	More than 5	51	39.8
How many files in average do you have per folder related to your research?	0 - 2	11	8.6
	3 - 5	32	25.0
	More than 5	85	66.4
Where do you store your documents related to your research?	Create new folder	79	61.7
	Desktop/ My Documents/ Download	32	25.0
	Existing folders	17	13.3

Using crosstab tabulation, and the categories identified in Table 1, we came up with the relationship between those categories in Table 1 and questions in Table 2. This is done by relating questions “How many folders have you created in your computer related to your research?” and “How many files in average do you have per folder related to your research?” with F1 and F2. While question “Where do you store your documents related to your research?” was related to O1 and O2 respectively. It can be

seen that the majority of the participants (n = 32 for F1) and (n = 53 for F2) have created more than five folders in their computer that is related to their research indicating that folder names are easy to create.

Table 3: Number of Folders Created in the Computer Related to the Students' Research for Different Values of F1

		How many folders have your created in your computer related to your research?			Total
		0 – 2	3 – 5	More than 5	
Folder names are easy to create.	1.0	0	0	1	1
	2.0	0	0	1	1
	3.0	2	5	1	8
	4.0	13	19	16	48
	5.0	14	24	32	70
Total		29	48	51	128

Table 4: Number Files in Average Per Folder Related to the Students' Research for Different Values of F2

		How many files in average do you have per folder related to your research?			Total
		0 – 2	3 – 5	More than 5	
Folder names are easy to create.	1.0	0	0	1	1
	2.0	0	0	1	1
	3.0	3	2	3	8
	4.0	5	16	27	48
	5.0	3	14	53	70
Total		11	32	85	128

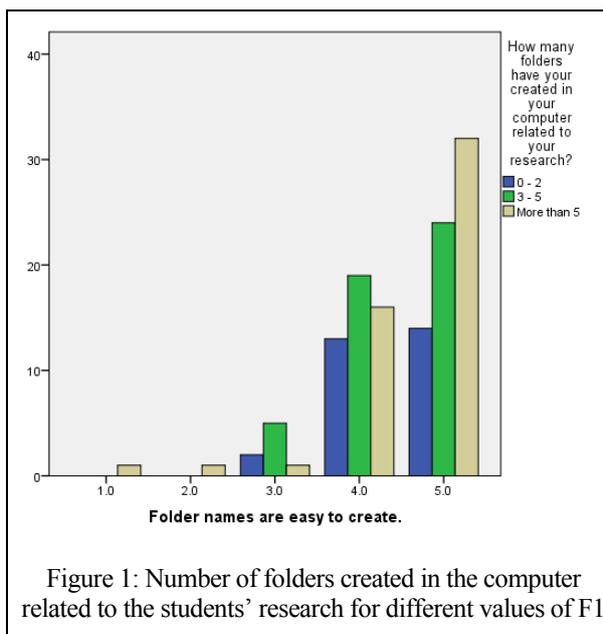


Figure 1: Number of folders created in the computer related to the students' research for different values of F1

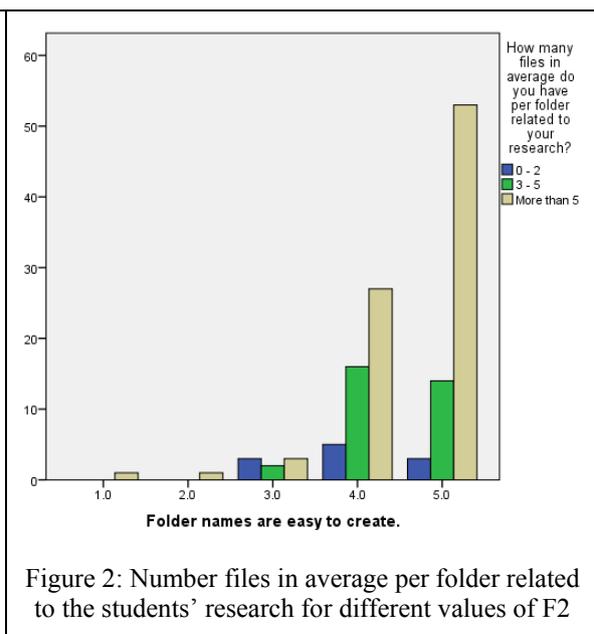


Figure 2: Number files in average per folder related to the students' research for different values of F2

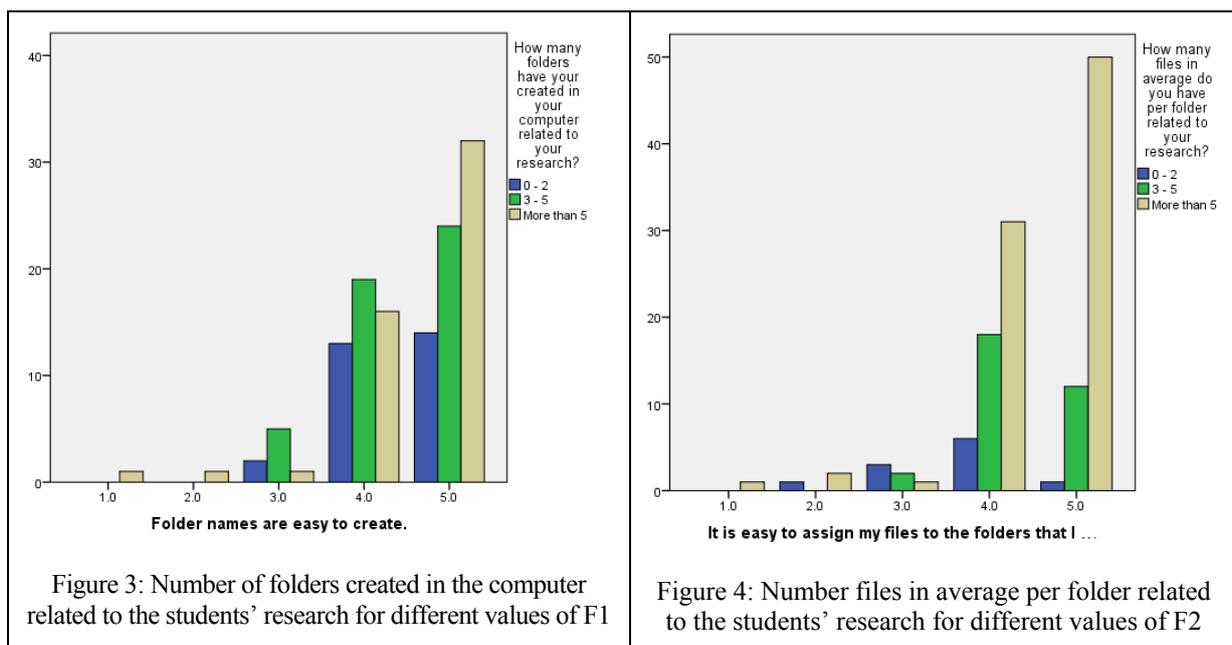
Likewise, the majority of the participants (n = 30 for F1) and (n = 50 for F2) have created more than five folders in their computer that is related to their research as they found it easy to assign files to the folders that they have created.

Table 5: Number of Folders Created in the Computer Related to the Students' Research for Different Values of F1

		How many folders have your created in your computer related to your research?			Total
		0 – 2	3 – 5	More than 5	
It is easy to assign my files to the folders that I create.	1.0	0	0	1	1
	2.0	0	1	2	3
	3.0	3	3	0	6
	4.0	15	22	18	55
	5.0	11	22	30	63
Total		29	48	51	128

Table 6: Number Files in Average Per Folder Related to the Students' Research for Different Values of F2

		How many files in average do you have per folder related to your research?			Total
		0 – 2	3 – 5	More than 5	
It is easy to assign my files to the folders that I create.	1.0	0	0	1	1
	2.0	1	0	2	3
	3.0	3	2	1	6
	4.0	6	18	31	55
	5.0	1	12	50	63
Total		11	32	85	128



It can be seen that the majority of the participants (n = 58 for O1) and (n = 61 for O2) who have chosen a Likert scale of 4 and 5, chose to create new folder in their computer when saving programs that are related to their research. This signifies that majority of these participants have a proper PIM organisation strategy.

Table 7: Locations of Stored Documents Related to the Students’ Research for Different Values of O1

		Where do you store your documents related to your research?			Total
		Create New Folder	Desktop/ My Documents/ Download	Existing Folders	
I am satisfied with my document organisation structure.	1.0	1	0	0	1
	2.0	3	2	1	6
	3.0	17	8	5	30
	4.0	41	17	6	64
	5.0	17	5	5	27
Total		79	32	17	128

Table 8: Locations of Stored Documents Related to the Students’ Research for Different Values of O2

		Where do you store your documents related to your research?			Total
		Create New Folder	Desktop/ My Documents/ Download	Existing Folders	
My files on the computer are well organised.	1.0	1	1	0	2
	2.0	5	3	1	9
	3.0	12	7	6	25
	4.0	44	16	7	67
	5.0	17	5	3	25
Total		79	32	17	128

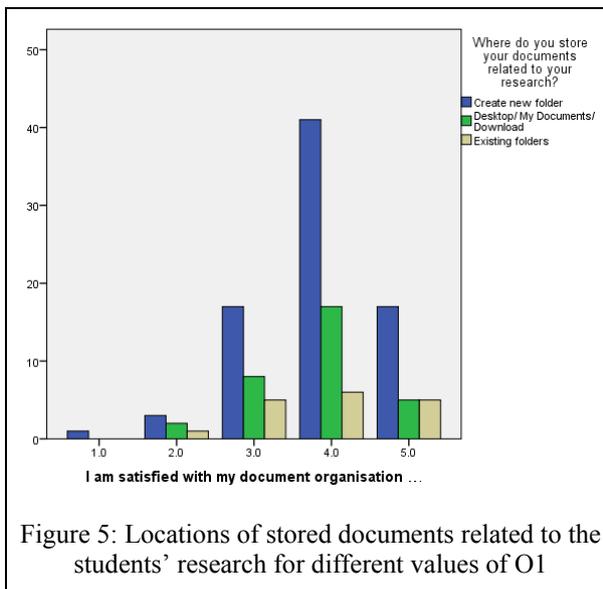


Figure 5: Locations of stored documents related to the students’ research for different values of O1

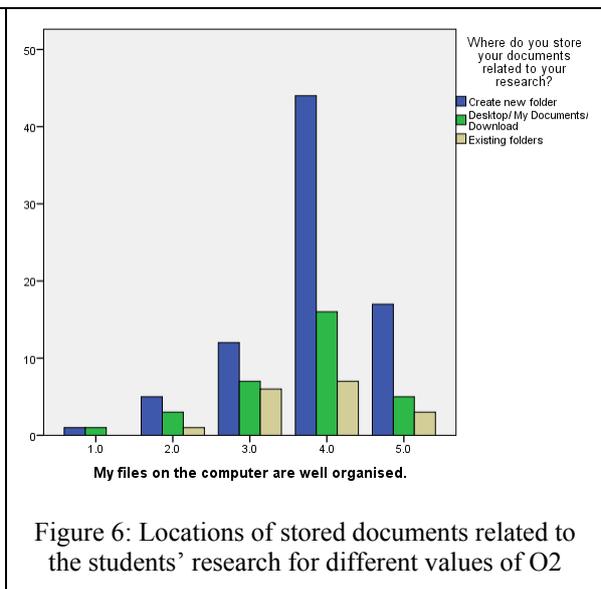


Figure 6: Locations of stored documents related to the students’ research for different values of O2

DISCUSSION AND IMPLICATIONS

The main purpose of this study was to investigate students' document organisation strategies in their desktops primarily, and as indicated by the results above, the participants were grouped into two major organisational categories which is piling and filing (see Table 2). The filers were more satisfied in their document organisation in their desktops. Therefore, the more properly organised they were in their document organisation skills, the easier and faster they would retrieve the document when needed later.

CONCLUSION AND RECOMMENDATIONS

Our results show that while there are elements of organisational skills used by students in order to create and use folders to find their documents easily, there is still room for improvement. This study is a preliminary finding for the organisational strategies of postgraduate students at Open University Malaysia. In our next paper, we aim to investigate the number of files and folders in each of the student's desktops in order to enhance our understanding of students' Personal Information Management activities and reveal how student actually manage personal information items in their desktops.

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EDUCATION FOR WHAT? HOW JOB AUTOMATION, CHANGING GENDER PREFERENCES, AND REDUCED CORPORATE HIERARCHY, AFFECT WORK

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ABSTRACT

Educationalists worldwide are faced with many predictions of mass unemployment due to the rapid advance of automation, especially AI (Artificial Intelligence). AI apparently has the potential to replace skilled workers, including millions of professional vehicle drivers, but also highly paid and educated “cognitive” workers such as managers, doctors and lawyers. This investigation includes a hypothesis that, when “technology-support” work is all automated, sufficient “human performance-related” occupations will be available, and that these will be protected from automation by strong social preferences. A second challenge for the current job market is the polarisation between those who support the traditional female role of mother, primary child guardian, and provider of caring service to the family, and those who seek absolute gender equity in identical occupational roles for men and women. The uncertainty about “natural” gender roles hinders solutions for the frequent breakdown of marriage, proliferation of single-parent families, and the failure of birthrate to maintain population. A third issue is uncertainty over the effect of the radical reduction in the hierarchical organisation of business corporations. Closely related is the increase in workers doing freelance work rather than being employed. In the USA this figure is about 36% and is expected to rise. Some writers predict that employment will be replaced by more entrepreneurial roles. The investigation will include the benefits and costs of such a change to companies and workers. These occupational trends will be investigated by literature surveys, qualitative research, including interviews of key specialists, and surveys of worker preferences on a multicultural basis. It is also hoped that this research can identify aspects of education that may facilitate the maintenance of good occupational opportunities in an era of uncertainty over the future availability of suitable work.

Keywords: *Unemployment, Automation, Gender Roles, Gig Economy, Hierarchy, Vocational Education*

INTRODUCTION

The main topic of this study is to identify the “long-term” boundary between human work and automation, especially AI (Artificial Intelligence). Automation has been steadily replacing human workers for many years, starting with unskilled workers, then skilled craftspeople, such as welders, paint sprayers and assembly workers in factories. Driverless road vehicles are just one application of AI that could create large scale unemployment in the years ahead.

Most recently, artificial intelligence systems (AI) have surpassed the human brain at several capabilities that were considered uniquely human, such as playing the games of chess and go, surpassing medical experts at interpreting patients' radiography images, and interpreting spoken languages. These technical advances raise the probability that robots and other forms of automation can not only replace skilled manual workers, but also tackle the main tasks of some highly educated professionals in "cognitive" occupations, such as lawyers, doctors, and stock analysts.

As a result of this success, specialists who develop automation are confident that their technology will advance indefinitely, and eventually outperform human workers in every respect. The possibility that AI systems can eventually surpass the human brain completely has resulted in a widespread fear that all forms of employment will be vulnerable to displacement by automation, resulting in mass unemployment and the failure of the market economy. Several major universities and other institutions have studied the potential of AI to replace jobs and generally agreed that existing AI technology has the potential to outperform human workers in up to half of human occupations.

Work in the Past

In order to understand how automation and AI threaten to replace human workers, we need to consider the historical relationship between people and machines. The first factories with steam-powered machines were invented in England in the 18th century, and they caused unemployment among the manual workers who had previously woven fabrics for clothing, or made wooden furniture, or worked on farms, or as blacksmiths making metal products by hand. In the last two hundred years, millions of workers in advanced economies have lost their jobs in agriculture, but found new ones in manufacturing. A later generation of workers lost their manufacturing jobs and found new ones in the service industries of the Information Age. In retrospect, we can see that, as technology was continually developed, starting from the 18th century, innovations regularly enabled machines to displace large numbers of workers, caused temporary unemployment. However, each time, the innovations also increased productivity and wealth, which made possible increased production and new factories, which created new jobs to replace those that had been lost. At the end of the 20th century, skilled human workers were being replaced by computers, causing expansion in the economy, and enabling workers to be retrained for service jobs that involved human interaction that could not yet be automated.

Some writers are optimistic that our past experience will be repeated and the displacement of human workers by AI will increase productivity and therefore expand the economy and bring another wave of new industrial jobs for people. But AI based automation is now learning to replace the tasks done by almost every kind of specialist worker, which means that the new employment created by economic expansion is dwindling towards zero. The idea that technology will create a new wave of jobs is no longer valid, because new tasks created by innovation will also be automated.

Furthermore, historical experience suggests that the introduction of such intelligent technology may be very rapid. For example, in 1900, horses were in wide use in industrialized countries, but by 1910 they were a rare sight in large towns. Automation is extremely advantageous economically, and companies must generally embrace high productivity in order to survive.

One solution that has received widespread attention is the possibility of paying whole populations a "UBI" (Universal Basic Income), whether they can find work or not. This may be possible, because, even if most jobs are automated, productivity will rise, creating additional wealth. However, it is important to realize that human work is not just about earning money: the work that individuals do provides fulfillment and validation of their value to society, and therefore their social status. If the automation of most work prevented millions of people from serving others by doing socially useful tasks, the very purpose of human life would be diminished.

In this investigation, we will attempt to provide new perspectives and information to contribute to understanding the future of work.

An Opportunity to Improve the Quality of Life for All Human Workers

Although the prospects of large-scale unemployment is worrying, one factor to bear in mind is that most employees in the industrial era do not like their jobs. A study by survey company Gallup shows that 26% of the 5 billion global adults have a “good job” which means 30 hours or more of paid work per week (Figure 1.). Only 6% of workers are “engaged” in their jobs, meaning that they use their strengths, know what’s expected of them and believe their job matters. Of 3.2 billion adults who are working, or looking for work, only 6%, or 183 million people, have a good job in which they are “engaged” (Figure 2.). The conclusion must be that, for the majority of people, the jobs created by industrialization have been unsuitable, and they would be better off doing something else. The central issue is: if AI and robots handle industrial tasks, can we identify suitable work for human workers in future?

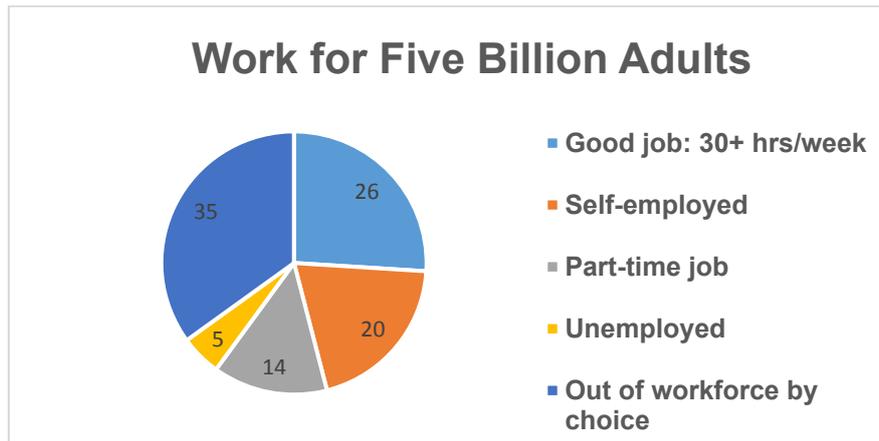


Figure 1: 26 percent of adults globally have a paid job for 30 or more hours a week

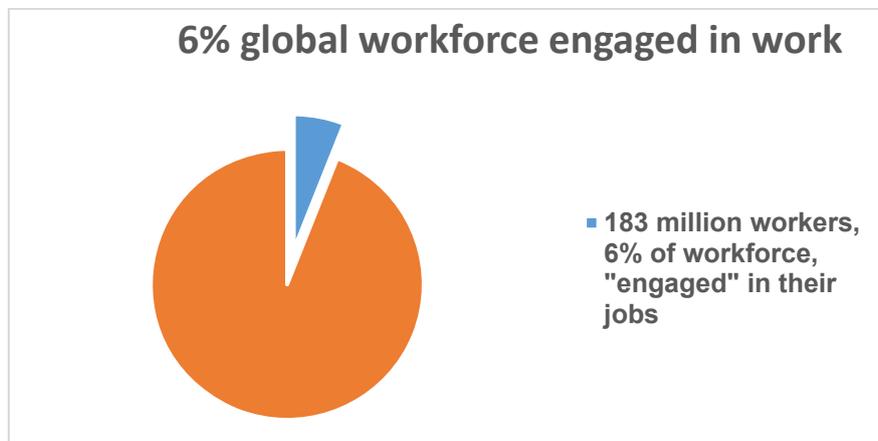


Figure 2: Only 6% of global workforce are “engaged” in their jobs (Gallup survey)

LITERATURE REVIEW

Three major studies estimated the proportion of jobs that will be automated by AI and other new technologies. The most widely reference paper, by Frey and Osborne (2013), predicts that 47% of US jobs are at risk of automation in the foreseeable future. This was followed by a Working Paper from the OECD (Arntz, Melanie et al. 2016), which concludes that the proportion of US jobs at risk of automation to be only 9%. The authors find fault in the research methodology of the Oxford paper, in that it appraised complete occupations, while automation applies to specific tasks, and an occupation may actually comprise multiple tasks, some of which cannot be automated at present.

We feel that the OECD study is too critical of the Oxford methodology. The OECD argument is that, if a human occupation comprises more than one task, then automation of that one task does not automate the whole occupation, so unemployment will not result. However, even if workers typically do several tasks, it is still true that automation of a single task will cause unemployment. For example, if “driving vehicles, such as trucks, buses, taxis, forklifts and ambulances” comprises 5% of an economy, and driving is automated, then we can expect to see 5% of workers lose their driving jobs in due course. Of course, drivers may be reassigned to other kinds of work, but if 5% of tasks have disappeared, 5% of work has disappeared, and therefore 5% of workers will lose that specific employment. A worker’s employment contract can be rewritten by HR dept. in a couple of hours. Supporting our view is a third study, from global consultants PwC, (Berriman, and Hawksworth, 2017) which finds that 38% of US jobs are at risk of automation, a figure much closer to the Oxford study.

Therefore, we feel that there is strong evidence that the advances already made in AI will enable a large proportion of occupations to be automated. Whether or not this results in mass unemployment, there surely must be major changes in the work that humans do over the next decades, and the purpose of our OUM study is to forecast what kinds of work that will be.

Differentiating Human Work from AI Tasks

Chinese industry is rapidly introducing automation, and Kai-Fu Lee, (Lee 2018), author of *AI Superpowers: China, Silicon Valley, and the New World Order*, predicts that robots are likely to replace 50 percent of all jobs in the next decade. According to Lee, AI is the “singular thing that will be larger than all of human tech revolutions added together, including electricity, [the] Industrial Revolution, the Internet, the mobile Internet – because AI is pervasive.” We agree with the strength of Lee’s claim, but his timescale of one decade may be premature, as technological goals often take longer than expected to materialize. Lee also expresses his belief that AI has limitations, in that machines cannot move people emotionally, and that service jobs should be considered “first-class” employment for humans. However, service industries comprise 80% of jobs in advanced economies, and other research has indicated that tasks such as food preparation and information services are even more vulnerable to automation than factory jobs.

Kai-Fu Lee’s global view is insightful and will stir people from complacency, but his claim that “machines cannot move people emotionally” is questionable. What if an AI driven diagnostic computer tells a “patient” that he or she has cancer – won’t that generate emotion? Or if an AI investor advisor tells his owner that he has just made half a million dollars on the stock market, would that not generate emotion? Perhaps Kai-Fu Lee was really implying the irrefutable point that AI systems don’t feel any emotion, undoubtedly a limitation.

A book that captures the competition between humans and AI is *Race Against the Machine*, (Erik Brynjolfsson & Andrew McAfee 2012). These authors believe that computerization is bringing deep changes, but have limitations “Computers are now great pattern recognizers, but lousy general problem solvers, and, for all their power and speed, today’s digital machines have shown little creative ability.” That’s true now, of course, but creativity is based not on magic, but on the manipulation of data and that is something computers do better than people. Given sufficient data and the right algorithms for

“trial-and-error” reasoning, AI systems may eventually be as creative as humans, and thousands of times faster.

Brynjolfsson and McAfee also suggest that humans are losing a “race” against the machines, but that if we understand the issues, human workers can race ahead with machines, instead of racing against them. We strongly disagree with the view that humans can “partner” AI systems in this way. Our experience of automation shows clearly that, although a small groups of specialists are required to support the operation of computers, the work itself is done solely by the computers, and the people who previously did the work are fired, or moved to other kinds of work. It is meaningless to talk about the relatively slow human brain “working with” a computer that is 10,000 times faster and that never stops for a break. If humans are to continue to work, they must find tasks where computers cannot compete with them – and that rules out any tasks based on computation. Hence the reason for this OUM study.

PwC’s study also showed that jobs in different countries have different levels of susceptibility to automation that result from different content of “management” or other high-level human skills, in relation to the routine tasks that can be automated. The PwC study emphasizes that some human skills are still beyond the grasp of AI, but it does not examine the reason for this limitation. In the OUM study, it is hoped to explain the limits to how AI can displace human workers.

A valuable article from global management consultants McKinsey is *Where machines could replace humans – and where they can’t (yet)*, (Michael Chui, James Manyika, & Mehdi Miremadi, 2016). This research identifies the types of tasks that current AI can and cannot do, and examines the industrial sectors to determine what proportion of their work can be automated. It no surprise that approximately 59% of work in the manufacturing sector can be automated, but what is of greater significance is that the service sector, which accounts for 80% of US jobs, is also vulnerable. For example, 73% of activities in the accommodation and food service industries could be automated with existing technology. Although such investigations help us to anticipate the future, it is impossible to predict the scope of new technologies or the dates that they may be adopted. Furthermore, new developments in AI will relentlessly widen the scope for replacing human workers with machines. The only certain limitation to AI is if humans have good reason to decide that some “work” should be done by humans rather than machines. The McKinsey study, like others, does not examine in detail the reasons why some human occupations will never be automated.

We have already cited a key publication from Oxford University that predicts the future of AI, and is entitled: *The Future of Employment: How Susceptible are Jobs to Computerization?* (Carl Benedikt Frey & Michael A. Osborne, 2013). The authors have set out to determine which problems engineers must solve in order to automate specific occupations. They then categorize 702 occupations in the US economy according to the probability that they can be automated by the year 2025. Their main conclusion is that 47 percent of US employment is at risk of automation. This paper is based on a very rigorous investigation and has rightly generated alarm about AI replacing human workers. However, like most such predictions, its central assumption is that, if AI has the capability to replace human workers at a viable cost, then employers will be forced by market competition to adopt it. This assumption is incorrect. Markets comprise voluntary agreements between buyers and sellers, and where the use of AI in production would alter the nature of goods or services, then the buyers may sometimes choose offerings that are produced by human labor rather than AI and machine processing. In the OUM investigation, it is intended to identify the context in which such preferences are most likely.

Two books that describe the “work” of Stone Age humans do not mention AI. These are: *Affluence Without Abundance: the Disappearing World of the Bushmen* (James Suzman 2017), and *Stone Age Economics* (Marshall Sahlins 1972). It may prove useful to bear in mind that several billion humans “work for a living” in the modern world, yet only 10,000 years ago, all our ancestors lived as hunter-gatherers, and there were no jobs, and no industries, not even agriculture. Yet these people – genetically modern humans, much like ourselves – managed to migrate across the whole planet Earth, without technology other than stone tools and control of fire. According to these two books, these prehistoric

people “worked” for only 15 hours a week, a fraction of the time spent by modern humans at their jobs, or working in their homes. Therefore, it may be wise to take account of the types of work undertaken by human ancestors in order to clarify the kinds of work for which humans are best adapted by their evolutionary history.

Discovering Gender-based Work Preferences

In the present OUM study, the view is taken that men and women appear to be adapted to significantly different occupations, because of their minor physical and mental differences, and also because in preindustrial societies, for millions of years, the two sexes spent most of their time in distinctly separate social roles. The reason why this is important is because the ultimate goal of an individual’s life is not merely to be economically productive, but primarily, to be “self-actualized” according to the principles expounded by the US psychologist, Abraham Maslow, who created the well-known diagram called: “Maslow’s Hierarchy of Motivations.” If men or women are prevented (for economic or cultural reasons) from working in their preferred occupations, for equitable remuneration, then self-actualization may be thwarted.

However, if men and women do (on average), prefer rather different occupational activities, only individuals can determine what these preferences should be. To understand the strength of feeling against social coercion influencing occupational choices, consider a paper entitled: *Do Men and Women Have Different Jobs Because of Their Biological Differences?* by Karen Messing (Messing 1982), Dept. of Biological Science, Quebec University. States Messing: “Allegedly for their protection, women are relegated to jobs supposedly adapted to their unique physical capacities and excluded from jobs which are said to endanger their health. So-called women's jobs are claimed to reflect women's “natural” qualifications in requiring less strength, more dexterity, less emotional stability, and in involving less risk for potential offspring. But it is impossible to demonstrate scientifically the existence of biological differences between women and men which suit either sex for particular jobs.” Messing points out that unhealthy working conditions are damaging to both sexes, and claims that gender-based job allocation serves employers’ interests by justifying low salaries and boring tasks for women.

However, a recent paper (Moran Gershoni & Shmuel Pietrokovski, 2017) has proven that men and women differ in ways that might affect their preference for certain occupations. The landscape of sex-differential transcriptome and its consequent selection in human adults, claims that, although men and women have almost identical genomes (total gene sets), there are 6500 examples of different traits in men and women that arose through SDE (Sexually Differentiated Expression) of the same genes. The researchers report that human sexual “dimorphism” (differences) have been demonstrated for diverse traits, such as brain anatomy and development, behavior, mortality, longevity and morbidity, and distribution and metabolism of fat creation. Physical performance capabilities and pain response have also been shown to differ between men and women. Men and women also have dissimilar disease susceptibilities. The research explains why congenital diseases, or infertility, that affect only one sex are not eliminated to due to natural selection. In simple terms, they can be passed to offspring through the other partner, and therefore maintain a high population frequency. Thus, genetics show that women are not merely specialized for giving birth, but also for a lifestyle that supports the traditional domestic role of females. This is relevant to the OUM study’s research objective of identifying any gender-based preferences that are needed to enable workers to be self-actualized in their working lives.

Additional evidence that men and women differ significantly in the genetic traits that influence occupational choice is provided by *The Blank Slate*, a book from a leading US cognitive psychologist, Steven Pinker, (Pinker, 2002) of Harvard University. According to Pinker, “All cultures divide their labor by sex, with more responsibility for childbearing by women, and more control of the public and political realms by men. The division of labor emerged even in a culture where everyone had been committed to stamping it out, the Israeli Kibbutz.” In all cultures, men are more aggressive, more prone to stealing, violence, and rape. Since women have to invest more calories in creation of their offspring, they also invest more in nurturing offspring. Males are more sexually competitive, because multiple

mating increases the offspring of males, but not of women. During evolution, men did most of the hunting, and required to navigate over a wide territory, and research shows males are superior at rotating and using mental maps. Pinker's well-respected views support the concept of male and female work preferences.

Remarkably, the gender differences in occupational preferences are not only observable in human children, but in our close relatives, rhesus monkeys. Sex differences in rhesus monkey toy preferences parallel those of children, (Hassett, Siebert, and Wallen (2008), compares the interactions of 34 male and female rhesus monkeys, to human wheeled toys and plush toys. Male monkeys, like boys, showed consistent and strong preferences for wheeled toys, while female monkeys, like girls, showed greater variability in preferences. Thus, the magnitude of preference for wheeled over plush toys differed significantly between males and females, probably due to hormonally influenced behavioral and cognitive biases.

Most boys not only prefer playing with mechanical toys than dolls, they prefer engineering careers. While some writers argue that women are kept out of technology careers by discrimination, Patti Hausman, (Houseman 2000), a female social scientist speaking at the US National Academy of Engineering in 2000 gave another explanation: "The question of why more women don't choose careers in engineering has a rather obvious answer: Because they don't want to. Wherever you go, you will find females far less likely than males to see what is so fascinating about ohms, carburetors, or quarks. Reinventing the curriculum will not make me more interested in learning how my dishwasher works."

A paper based on feminist ideas that are more compatible with scientific knowledge is: *Unpaid Work and the Economy: Linkages and Their Implications*, Indira Hirway, (Hirway 2015), Levy Economics Institute, Bard College, New York. This paper is about the very significant percentage of productive work, in all societies, that is mainly done in the home, such as preparing meals, providing care to children and the elderly, and cleaning the house. The central issue raised by this work is that it is unpaid, and distorts our view of the wider economy, which it clearly helps to support. A second issue is that women do more unpaid work than men, which reduces the total earnings of women, and handicaps their performance in the market economy.

The goals of Hirway's study are related to what is seen as the anomalous position of modern women, who have to cope with both their dominant role in bearing and raising children, and providing domestic care to husbands and other family members, in addition to any professional work that they do in the market economy. Writes Hirway: "This unequal distribution of work is unjust, and it implies a violation of the basic human rights of women." Research such as this paper is being taken seriously, and the UN has produced documents proposing ways in which unpaid domestic work can be recorded as part of the production output of national economies. However, it is acknowledged that not all personal services of care can be regarded as part of market economy, and there is a limit to the degree that state-hired professional care-givers can replace the work of family members.

Regarding the studies cited above, this OUM study recognizes that family life is of central importance, and that both men and women must be satisfied that their collaboration is equitable, harmonious, and sustainable. Therefore, this study will research the "ideal" preferences of men and women in their familial roles, taking into account the need to provide children with a safe and fulfilling environment, and also to identify gender roles that suit the sexual specialization that may well affect the occupational preferences of men and women. These preferences have been largely ignored since the Industrial Revolution, because of the urgent need to earn a living by "getting a job", but as AI forces societies to redefine the nature of work, more emphasis is likely to be given to the self-actualization of the individual.

Investigating the Effect on the Work Market of Reduced Hierarchy

The 17th century Industrial Revolution comprised huge factories, driven by steam power, and thousands of workers who were pressurized into giving up their craft skills and being centralized in organizations managed by steep human hierarchies. But, today, large organizations are already highly automated, and have many fewer employees, who are carefully selected for their specialized skills and education. The hierarchies have been “flattened” and those responsible for creative roles often work in small autonomous teams. As human labor is reduced by automation, more workers have “part time or “contingent” responsibilities, and many become freelancers, or entrepreneurs with startups.

In the USA, the proportion of self-employed workers is about 40% and growing fast. With the new miniaturized production technologies, one-person businesses, or those with a handful of workers, can replace much of the traditional economy. Whereas a large, centralized company can automate its processes and replace most of its employees, tiny companies can use AI, but its owners and directors are unlikely to automate their own jobs.

The capital required for production processes (publishing, 3D printing, local power generation, website creation and management) is no longer a barrier to business startups, and this further supports the decentralization of the human workforce. Internet business platforms such as eBay, Uber, Air BnB, and the many travel companies, support millions of local autonomous workers.

The replacement of jobs by autonomous entrepreneurs is the subject of a book entitled: *The End of Jobs: Money, Meaning and Freedom Without the 9-to-5*, (Taylor Pearson 2015). Pearson’s primary theme is that the traditional view, that entrepreneurship is a high-risk adventure compared to the long-term security of employment, has been reversed by economic conditions and new technology. The author makes a compelling case that entrepreneurship is not only relatively easy and cheap now, but secure, because it is based on personal skills that are transferable between opportunities. In contrast, writes Pearson, even white collar jobs are being rapidly replaced by automation, while there is a surfeit of graduates looking for work, and communications technology has made it possible to utilize cheap white collar skills online anywhere in the world.

Now, writes Pearson, the most effective way for individuals to leverage their ability is by the pursuit of entrepreneurship, which comprises “complex” work that cannot yet be automated.

Managing complexity and chaos is the challenge that requires entrepreneurs. Learning that skill is the only path to security for graduates who discover that their degrees are now commonplace, while their jobs are being decimated. If Pearson is correct, the most secure form of work in future will be entrepreneurship, because entrepreneurs are less likely to be forced out of work by automation, especially in the occupations where human relations or human creativity still has an edge over AI.

Pearson’s book supports our thesis that, as large organizations introduce AI and gradually automate the tasks done by human workers, they also reduce their management hierarchies, and encourage more autonomy on the part of remaining employees. This process prepares the way for skilled employees to become entrepreneurs and create new startups, in some cases, adopting AI technologies themselves. As employees become more autonomous, and eventually sell their skills directly in the marketplace rather than becoming employees, their ability to create new kinds of service, based on human skills that cannot be emulated by machines, will increase.

Two co-authors who have investigated organizations that have no hierarchy at all are Ori Brafman and Rod A. Beckstrom (2006), in *The Starfish and the Spider – the Unstoppable Power of Leaderless Organizations*. Hierarchy was the mark of the large capitalist organizations of the Industrial Revolution, which depended on the economies of scale, and were engineered with a lot of money and time to

produce goods in massive quantities, cheaply. Since the design of complete factories was determined centrally at the start, the employees had to be controlled to operate the processes according to rules laid down by management that indicated what action to take under every set of circumstances.

With modern automation, computer networks, aided by AI can actually run organizations, making most decisions with practically no managers, and few employees. In response to this changing technology, corporations are flattening their management hierarchy, and extending a high degree of autonomy to key employees, especially those in a creative role.

Author Marcus Clarke (2015), in his book *The Future of Work: Human Value in a Digital World* points out that, while AI, 3D printing and nanotechnology will enable corporations to replace many workers, digital communications are disintermediating economic processes, undercutting the very purpose for which organizations and employment were created. So automation may enable large proportion of the population that had been locked into employment for generations to negotiate markets and make a living without any “middle men” – meaning organizations, or even governments, assuming authority or taking a cut of the revenue. Also, new technologies have reduced the size and cost of many production processes. It is much less costly for entrepreneurs to create startups, and this will increase the proportion of entrepreneurs as AI closes down many jobs.

Education will be Vital in Preparing Students for the New Work Environment

State education has often been about molding students to become desirable employees, while reformers tend to see innovative education as more likely to be about helping individuals to reach self-actualization. One country, Sweden, has apparent altered its education system from one favoring socialist passivity to one teaching a robust entrepreneurship, according to a paper entitled: *In the Name of Liberation: Notes on Governmentality, Entrepreneurial Education, and Lifelong Learning* (Magnus Dahlstedt, & Frederik Hertzberg 2013). This paper describes a radical shift in educational policy introduced by the “right wing” Swedish government in the 1990s, which has the ambitious task of teaching entrepreneurship in order to remold Swedish citizens from their previous “hindsight culture” in which students learned a passive role, which contributed to the development of learned helplessness under a centralized welfare state. In contrast, as the pursuit of entrepreneurial behaviors became a mainstream goal of Swedish education, it was hoped to produce ideal citizens, primarily active, and motivated and able to take responsibility for themselves and their welfare.

The scope of learning outcomes were broadened, with emphasis on the promotion of values including creativity, independence, flexibility, initiative, problem-solving skills, and self-confidence. This paper suggests that the Swedish educational model was influenced by the French Philosopher, Michel Foucault, who used the term “governmentality” to describes government of society in a broad form, which includes the moral aspects of behavior, the and not only the responsibilities of state authorities, but the responsibility of citizens to manage their own lives. Thus the title of this paper, which refers to the “liberation” of citizens who are made more proactive by liberal education, which at the same time, enables individuals to contribute more effectively to economic growth and job creation under the capitalist system.

It seems inevitable that state education, with its high levels of inertia, cannot be reformed rapidly. Yet overall, the education sector worldwide incorporates a large variety of innovative approaches that can act as a laboratory for new initiatives. It seems certain that the advance of AI throughout society will stimulate a great deal more of these initiatives. As the global economic system is shaken by the disruptions caused by AI’s churning of labor markets, the demands on education may alter radically. If the jobs that we are calling “technology-support work” disappear as rapidly as expected, the demand for education may diverge in two directions. The first is to teach people who work in the service industries related to “human performance-related” work (professional sport, entertainment, art, education and mentorship). The second direction is to teach future workers who handle the relationship between the human species and the enormous and diverse industries of the future. These industries will,

of course, be almost entirely managed by AI systems from day-to-day, but their goals will be determined by human needs. The needs for the basic industries that construct the infrastructure of civilization, and provide the food, clothing and dwellings in which people live, will be the main task. But in addition, automated industries, will enable the development of small-scale local production facilities that will enable individuals and local groups to produce customized products for niche markets. Just as “print on-demand” books, and e-books can be published by individuals, many manufacturing and process industries are expected to follow a similar decentralized pattern.

Perhaps another role for education will be to harmonize the moral values of different, competing human cultures. Morality is the basis for law, and if we wish to have a peaceful future, and universal human rights, the same values need to be first agreed globally by the human species, and then taught to every new child from birth.

The pace of technological advance is likely to accelerate, and this will give impetus to the need for life-long learning, which will probably require a major expansion in the number of people in teaching occupations. At the core of all learning is the relationship between humans and society that cannot be taught by machines.

FINDINGS AND DISCUSSION

The objective of this study is to investigate what kinds of work – if any – will men and women do in future, as robots and automation increasingly displace human workers. Current automation can already have the potential to replace human workers in up to a half of existing occupations. AI systems are beginning to handle the tasks done by highly educated “cognitive” workers such as doctors, lawyers and stock market analysts. AI is a vital technology, and the performance of AI systems is likely to advance rapidly, driven by global research, led by the intensive competition between China and the USA. At present, AI applications are focused narrowly on single tasks, but developers are ultimately aiming at “AGI” (Artificial General Intelligence) which will have the ability to transfer ideas and logic between different fields, as the human brain does, and this may enable automation to replace human decision makers in even the most senior level occupations.

Work in the Industrial Era

The threat of automation replacing human workers seems like a new problem, but it’s not. Until the 17th century, everything that people needed was produced by workers using hand tools. The Industrial Age started with the first Industrial Revolution, which took place in England, from about 1750. Factories were driven by steam power, which enabled machines to replace thousands of craftsmen and craftswomen who used hand tools. But the early factory machines required many human workers to maintain and repair them, and move raw materials and work in progress around the factory floor.

Since that time, machinery has been constantly redesigned improve its performance and to enable it to operate with less human support. The result is that generations of workers doing specific factory jobs were replaced by improvements in mechanization. When computers were introduced, they replaced humans’ supervision of machines, enabling them to operate autonomously.

Although the automation of industrial machines replaced human workers, the wealth generated by more efficient machines enabled more goods to be produced, and more new factories to be opened, and that provided new jobs to replace those that had been lost.

Nevertheless, the increasing automation of machinery was slowly changing the ratio of human workers to machines in every industry. By the end of the 20th century, new industrial investment was creating factories that were almost completely automated, and corporations based on the Internet, that required very few workers. That means that, as more human occupations are replaced by automation, the wealth created will not create many new jobs in the technology-based industries.

So the central problem is that most people work in the industries that create the resources necessary for human civilization, and it appears that all these industries will shortly be completely automated, and therefore require no large scale human labor. These industries include agriculture, food processing, manufacturing, textile and garment production, logistics and transportation, investment and banking, and communication.

The “Industrial Era” is Ending

To sum up, humans began working with machines in about 1750, and the proliferation of machines created the wealth of modern civilization. However, the gradual advance in machine design, and especially the automation created by computers, have constantly enabled machines to operate with less human support. As this process is completed, hundreds of millions of people will lose their jobs and it is not clear how the market system can continue unless alternative forms of paid work can be found.

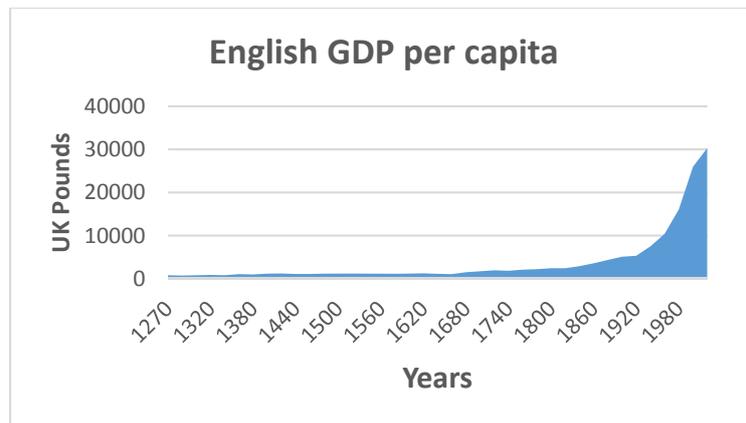


Figure 3: English GDP per capita, from 1270 until 2016

The above chart (Figure 3), shows the English gross national product per capita from the 13th century until the present. In the first 400 years, the economy was based on men and women using only hand tools, and it can be seen that the economy did not grow significantly during this period. In the 18th century, steam engines and many other machines were invented, and in the 19th century, the first factories were built. Machine production caused the economy to grow right up to the present time.

At first, the machines were primitive, and the factories required a large number of human workers to maintain output. As the machines were improved, they required less workers to maintain output, so the working population was spread over a large number of factories and industries, increasing the standard of living. However, by the end of the 20th century, automation, including AI, could almost entirely replace human workers, and mass unemployment seems possible.

We can conclude (Figure 3) that the output of individual human workers tends to be constant, while the output of machines has risen due to technological advances. The chart below (Figure 4) shows the constant output of a human worker in GDP per capita, plotted as a percentage of the total GDP per capita. Before the Industrial Revolution, human workers created 100% of the output, and then this percentage fell as the machines were improved. The human contribution falls towards zero, indicating

that all industries based on technology will be totally automated in the near future. Therefore, if we consider that the “Industrial Era” is the period between 1750 and 2050, then the ratio of human workers to machines fell continually, reaching close to zero when the machines were completely automated.

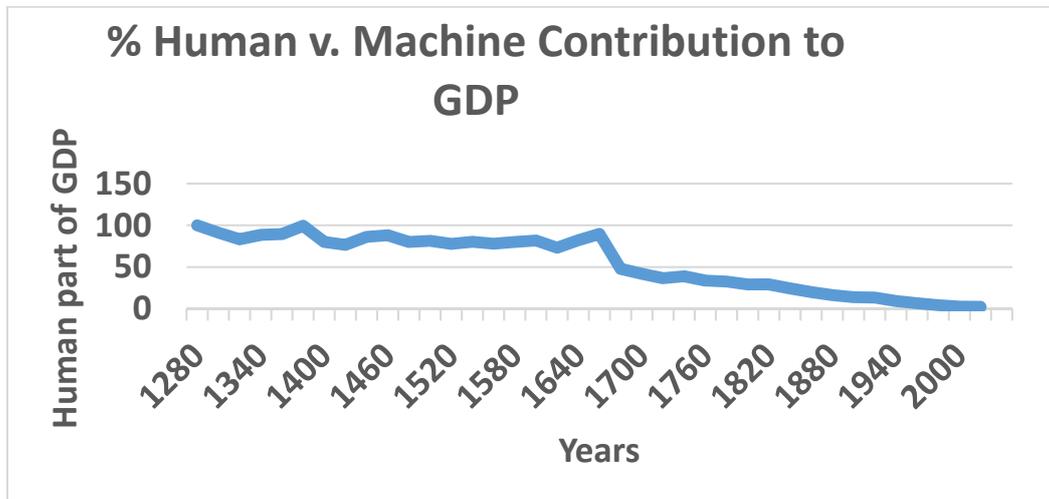


Figure 4: Human workers output as a percentage of English GDP

AI will Eventually Outperform Humans in Any Occupation

Up until the 18th century Industrial Revolution, human work was based on the intelligence of the human brain, plus the strength of human muscles. Machines quickly outperformed human muscles by thousands of times, and other machines, including computers and especially AI systems, have outperformed the human brain in computation and some forms of decision making. Furthermore, AI is now the focus of intense worldwide research, so it is reasonable to believe that AI will soon outperform human workers in all those occupations that are based on technology, computation, or other systematic forms of logic.

As a result of these predictions, many thinkers feel that mass unemployment is likely in the near future. However, the “Industrial Era”, in which humans have been dominated by machines, and mostly worked at tasks related to technology and production, is really just a passing phase in human history. As we have seen, complex machines were only invented in the Industrial Revolution, starting about 1750, and this era will end about 2050, when most machines will be entirely automated and self-maintaining. After that time, humans must return to more natural kinds of work, and cease to sacrifice human nature to the blind demands of technological progress.

The Definition of Work

When we discuss the meaning of “work”, we generally restrict the meaning in three ways. First, we think of working for other people, especially companies that need human labor to produce their goods or services. Second, we naturally assume that work is something we do in return for wages. Third, we may think that work is something that we would not do out of free choice – we do it only to earn our living.

However, the dictionary definition of “work” is simply the expenditure of mental or physical energy in order to obtain some kind of benefit. Therefore, “work,” in principle describes *all* purposeful human activity, (but not accidents), because all purposeful activity is intended to obtain an advantage of one kind or another. It is useful to remind ourselves of these three points:

1. Although many people dislike their work, work can range from tasks that are intensely fulfilling and enjoyable, to tasks that seem like a form of torture.
2. Work can be carried out to benefit the worker, or other people.
3. Work can be carried out for payment or for charity.

However, in this paper, “work” is mainly used to mean activity that can earn remuneration in a market economy. For example, ball games as leisure activities reward players with fitness and social bonding, but in the context of professional sport, footballers earn remuneration as part of the labor market.

The Work that Only Humans will Do

When researchers assume that all human occupations can be replaced by AI or robots, they believe that business enterprises will always have the right to replace human workers when automation can do the same work to the same or a higher standard, and at a cost that makes the change profitable. This is not the case, however – in a free market, business enterprises cannot automate occupations unless the customer will accept the change.

First, consider a manufacturer of smartphones who employs human workers to assemble the devices. Suppose robots become available that can assemble the phones more perfectly and reliably, at a lower cost. Will the end customer object to the change to robotics? No, of course not. The customer for a smartphone, or any other manufactured product, is indifferent to the manufacturing process, unless it is harmful to the user.

Second, consider a company that organizes a professional sport such as soccer. It is likely that, in the near future, it will be possible to program robots to play football better than human players. Will the customers object to this change? Absolutely, yes! The function of a football match is to provide entertainment (and information that is needed for biological reasons) about the relative athletic and mental attributes of communities and of humans with varying physiological traits (Note that robots will play football occasionally, but this will usually be a competition between humans who design or program the robots. Humans are always interested in human competition, but competition between machines as an entertainment has no future).

The same considerations will apply to entertainment. Although it will be possible to create robots who can sing, dance, act, even do stand-up comedy, as well as most human performers, customers will not wish to pay for substitutes. The same is true of some forms of education. Although automation can make a great contribution to many forms of self-learning, it would clearly be undesirable to allow robots to try to socialize and educate small children in a kindergarten. Another category of occupation that cannot be automated is art. Real art, including fine movies, for example, are really a form of implicit communication about life, from the human artist to the audience. If art is created by automated systems, it is no longer genuine art, although it may be entertainment or decoration.

It can be concluded that some human occupations, including professional sport, entertainment, education, and art, are only valuable in the marketplace if they are performed by humans. Whether robots could or could not be programmed to replace humans is irrelevant in these cases.

How These Occupations will Provide Enough Jobs

If we accept that certain occupations must be performed by humans to satisfy customers who control the market, a new question arises: whether this class of occupations can provide enough work for all humans when all the industries that create resources have been automated. The answer is that this is one of the subjects of the present investigation. It should be noted, though, that the industries that provide most work today are based ultimately on machines and technologies that did not exist at all until the 18th century. So, prior to that Industrial Revolution, humans had managed to fill their time for two million years of the evolutionary period, without this kind of advanced technology – therefore, we can presumably survive without “technology-support” work.

Table 1: Human Occupations that will Not Be Automated

Some Human Occupations that will Not Be Automated
<p><i>Designer:</i> When a designer creates the concept of a new artifact, or makes a prototype, AI can be used to explore thousands of variations (“iterations”) of the design, in order to optimize it for production. In future, AI systems equipped with enough data may propose new inventions, but it is likely that humans will retain the ultimate control over artifacts that are actually needed and wanted.</p> <p><i>Professional sportsperson:</i> The human species has always had a need for athletic contests to maintain cultural memes about health and social status based on athleticism.</p> <p><i>Professional entertainer:</i> Singing, orchestral music, dancing, acting, comedy, etc.</p> <p><i>Artist:</i> Art in movies and videos, literature, sculpture, painting, photography, etc.</p>
<p>Educator in Many Domains</p> <p><i>Infant education:</i> Infants who can only be taught by their peers and human teachers, not machines, because they are learning “socialization.”</p> <p><i>Philosophy:</i> The path to self-actualization in a competitive society.</p> <p><i>Sports:</i> Coaching for professionals and amateurs.</p> <p><i>Entertainment:</i> Teachers of music, dance, comedy, acting, etc.</p> <p><i>Psychiatry:</i> Teaching “contentment” and self-actualization through wisdom, rather than drugs. Similar to philosophy, but for people who have encountered problems due to stress.</p> <p><i>Eugenics:</i> Advisor to parents about the genetic knowledge that will be used to avoid hereditary diseases, and to promote a healthy, thriving, human species.</p>

Discovering Gender-based Work Preferences

The second objective of this investigation is to consider the occupational roles of men and women throughout prehistory and history, and to survey the “ideal” occupational preferences of the two genders. It is useful, for example, to answer the question: to what degree do modern humans decide their occupations on the basis of aptitude and personal interest, and to what degree based on the economic pressures that force individuals to prioritize income over passion?

Let’s remind ourselves of how our early ancestors lived. The first people on earth, according to anthropologists, lived in Africa about 1.7 million years ago, and people continued to live in small bands of hunter-gatherers until about 10,000 years ago. This means that all men and women have worked in entirely different roles for about 1.7 million years – about 99.99% of the history of humans – while in a few modern industrialized countries, the two genders have worked in almost identical roles for only about 70 years since WWII. During the hunter gathering phase, men and women spent much of their time in separate groups, carrying out the different social and work functions for which they were

extremely well adapted by evolution. For example, men did most of the hunting, protected their families, and slightly dominated in managing the relations with other groups, Women controlled domestic affairs, gave birth and did more than half of the child raising, and gathered essential plant food. Both these gender roles were essential to maintaining human communities, and therefore the sexes were of equal status, according to anthropological research (Marshall Sahlins 1972).

Separate traditional male and female roles continued through the agricultural age, but in the 19th century, the birthrate of industrialized nations dropped sharply, and in the and 20th century, women began to go out to work in the same labor market as men. The policies of modern governments has altered the incentives for women, who now have a choice between earning similar salaries to men in a career, or doing what is considered as “menial” unpaid work, giving birth to, and raising, children. The birthrate is now radically below replacement level, marriage rates have dropped greatly, and normal family environment for children is no longer possible for the majority of people in the most industrialized societies. The question raised by these changes is whether women – or men – want these changes, or whether modern work preferences are the result of bad economic planning. Giving birth, and raising children are arguably the most important “tasks” that anybody can do, yet they are unpaid, which represents an anomaly in the labor market.

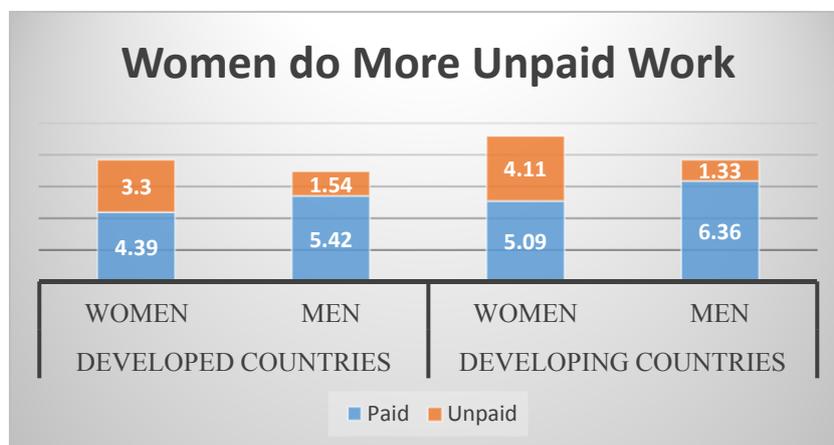


Figure 5: Women do more unpaid work (Data from: UN Women, 2016)

To solve this problem of modern society, it is necessary to determine whether the identical work roles of males and females is really a useful and natural adaptation, or one that is enforced by technological accident, like, for example, pollution.

Our second research objective is to discover whether men and women would prefer to work mainly in their traditional gender roles, provided that the economic system supported natural human social relationships. There is strong opposition to this view from those pursuing gender equality. One paper states: “But it is impossible to demonstrate scientifically the existence of biological differences between women and men which suit either sex for particular jobs.” (Messing, 1982). However, there are a great number of scientific studies that show that men and women are specialized for different kinds of work. A single paper (Moran Gershoni & Shmuel Pietrokovski, 2017) reports the discovery of 6,500 genes that generate different traits in males and females. While we know that men and women have similar intelligence and capabilities, if they are adapted by nature to occupy slightly different roles, then understanding these factors may be important to the job satisfaction of both sexes.

There is much evidence that women in many societies are dissatisfied with their dual role, as they are pressurized to remain unpaid primary caregivers in the home, even though they work in the job market alongside men. Some women feel that men should share domestic work equally. Another view is that men and women should both be paid for domestic work, but it is not clear who should pay for it. A major aspect of domestic work is childbirth, breast-feeding, and childcare, which may stretch over

long periods. The economic disincentives facing women who only work in the home is also related to the drop in human reproduction rates in industrialized societies, which threatens the long-term existence of such populations.

The global value of women's work may well be higher than that of men's work, but much of work done by females is not paid, and traditionally, women have played a subordinate role in the economy than men. Men are also dissatisfied with the loss of many industrial jobs that were traditionally taken by males. Some men complain that welfare systems increasingly replace the traditional role of husbands in the family.

As we enter the era in which automation will eliminate most industrial occupations, all societies will have to consider how to migrate to new working patterns. This could involve radical changes to the work done by men and women, and perhaps to the organization of family life.

When these changes come, the adjustments made to occupational roles will also be deeply affected by the needs of society to maintain a stable family environment for the raising of children. Ultimately, the limiting factors are unlikely to be wealth, or productivity, which are likely to expand rapidly in the era of automated industrial production; the limiting factor will be the biologically based preferences of men and women to live in a society with a stable family environment that will support the best possible nurturing of children.

Investigating the Effect of Reduced Hierarchy on the Work Market

The third objective of the OUM study is to investigate the consequences of reduced hierarchy throughout the business world, with the tendency for highly collaborative working groups with little or no formal hierarchy to replace the traditional "command structure" of large corporations. Apparently associated with this "flattening" of enterprises, is the steady increase of the "Gig Economy", comprising contingent, or on-demand work, freelancing, consultancy, and entrepreneurial startups.

Questions related to this trend include whether freelance workers can acquire multiple clients and insure themselves against the total loss of income accompanying loss of employment. Another question is whether workers who give up employment and participate directly in the market can experience more vocational passion, or self-actualization as a result of free choice. An issue that concerns the whole of society is whether a decline in employment and an increase in people working autonomously in the market as freelancers or entrepreneurs will increase the unity of the whole business workforce, by abolishing the class divisions between employees and employers. The antagonism between trade unions and management that still persists today surely had its foundation in the hierarchical early factory system, which Karl Marx criticized as based on the exploitation of the "proletariat" by the "bourgeoisie."

Education will Prepare Students for the New Work Environment

Education has a vital role to play in easing the changes in society brought about by the end of the Industrial Era, and the loss of millions of jobs to automation. The Industrial Era has greatly raised the standard of living for developed societies, but the cost has been that many people have to do work that is dirty, dangerous or dull (see Figure 6).



Figure 6: Technology-support work is often dirty, dangerous, or dull (left), coal miner (center) and deep-sea diver (right) retail cashier

Mandatory state education is a global standard that was formulated for the 19th century Industrial Revolution, to provide obedient workers for European factories and armies. Of course, modern schools have improved, but the basic model has never been radically reformulated to meet the needs of the individual student. It seems likely, however, that the range of paid occupations available to the next generation will be greatly altered by the impact of AI and other automation technologies. This and the accelerating rate of change of technology will oblige all societies to review their educational resources. Meanwhile, the absence of specific knowledge about the likely changes to the market for work presents a challenge to educational planners.

CONCLUSION

The main objective of this investigation is to determine the most likely changes in human occupations that will result from the global application of advanced automation technologies, especially AI. In the Findings and Discussion of this study, we predicted that AI systems will eventually replace almost all workers in “technology-support” occupations, but human workers will retain “human performance-related” occupations. The objective is to validate this prediction, primarily by showing that current occupational trends are in line with the prediction. A second objective is to investigate the “work” issues that plague modern marriage in industrialized countries. In some societies these include the birthrates below replacement level due to the demographic transition, the dissatisfaction of women at doing more unpaid domestic work than their husbands, divorce, and the withdrawal of many young men from marriage due to the risk of the discrimination against males by divorce courts if the marriage should fail. In other societies, women have a normal family size, but usually less rights than men to work, or participate in society. Whatever the detailed reasons for such differences, these problems clearly result from human cultures that have departed greatly from their original natural form. The objective of this study is to see what light can be shed on these issues by surveying diverse populations.

The second sub-topic to investigate is the consequences of reduced hierarchy throughout the business world, with the tendency for highly collaborative egalitarian working groups to replace the traditional “command structure” of large corporations. Apparently associated with this “flattening” of enterprises, is the steady increase of the “Gig Economy”, comprising contingent, or on-demand work, freelancing, consultancy, and entrepreneurial startups. Ultimately, reduced hierarchy could result in the replacement of employment by self-employment. Our objective is to investigate what actually tends to result from hierarchy reduction. It is hoped that this study will identify some of the issues raised by radical occupational change that can be addressed by new kinds of education. Mandatory state education is a global standard that was formulated for the 19th century Industrial Revolution, to provide obedient workers for European factories and armies. Of course, modern schools have improved, but the basic model has never been radically reformulated. As we near the end of the Industrial Era, it is appropriate

to consider how education can assist in alleviating the effect of rapid changes in the market for human workers. The capability of AI systems is being intensively developed in many nations, and there appears no absolute limit to the work that can be automated in the long run. While “creative” tasks are currently out of reach of computers, they will not remain so. The only question is: how many years will it take before *any* job can be carried out by AI based systems? This does not mean that humans will not have any paid work to do in future. But it does mean that societies will have to be restructured to accommodate the automation of whole productive industries. Societies worldwide must determine in advance what kind of work people will choose to retain as human occupations, in order that new generations of young people can be educated appropriately and that businesses can plan for the future.

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EMPOWERING THE POSTGRADUATE TEACHERS IN INTERNATIONAL BACCALAUREATE EDUCATION (IB) USING 21ST CENTURY TEACHING AND LEARNING SKILLS

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ABSTRACT

In Malaysia, there is a growing need for International Baccalaureate trained teachers as the Ministry in Malaysia has decided to introduce IB curriculum into their public school system. Therefore, in line with the IB Commitment to develop worldwide professional learning community and to build international mindedness among the teaching community, University College Fairview, Malaysia, runs Postgraduate diploma and degree programmes to empower teachers to imbibe the IB concepts and principles of 21st century teaching and learning skills by focusing on IB Philosophy and principles. The data from fifty student on their reflections about the course were analysed along with their mentor observation form to capture their understanding of 21st Century teaching and learning skills. As such, this paper examines the methodology and approaches used in teaching, learning and assessment in the process of empowering the IB teachers during their course delivery of the Postgraduate Diploma in Education in the International Baccalaureate programme.

Keywords: Professional Learning community, mentor observation, International Baccalaureate, International Mindedness

INTRODUCTION

Education in the 21st century highlights globalisation and internationalisation. Any advancement of technology presents theoretical constructs and realistic insights in the development and enhancement of knowledge, skills, and attitudes among students and teachers (Abao, Dayagbil, & Boholano, 2015). Thus, what is needed of a 21st century teacher is a balance of the objectives of the teacher with the needs and input of the students as disclosed by McCoog (2008). Today, to become an efficient International Baccalaureate teacher, the International Baccalaureate organisation is committed to supporting the ongoing development of a Worldwide professional learning community of internationally minded teachers, school leaders and school administrators. Thus, it provides, high quality, innovative products and services to help new, experienced and expert school leaders and educators understand, support, and successfully deliver IB programmes (Chen & Dean, 2011; Dean, Tait, & Kim, 2012). In Malaysia, there is a growing need for IB trained teachers as the Ministry in Malaysia has already decided to introduce IB curriculum in their public school system. Therefore, in line with the IB Commitment to develop worldwide professional learning community and build internationally minded teachers, University

College Fairview runs Postgraduate diploma and degree programmes to empower the teachers to imbibe the IB concepts and principles of 21st century by focusing on IB curriculum teaching. As such, this paper examines the methodology and approaches used in teaching, learning and assessment in the process of empowering the IB teachers during the course delivery of the Postgraduate Diploma in Education in the International Baccalaureate programme.

LITERATURE REVIEW

In the article published by partnership of 21st century learning in 2009, it says that 21st Century Curriculum and Instruction focuses on providing opportunities for applying 21st century skills across content areas and for a competency-based Approaches to Learning (ATL). At the same time, developing students' ATL skills is about developing cognitive, affective, and metacognitive skills, as well as encouraging students to view learning as something that they "do for themselves in a proactive way, rather than as a covert event that happens to them in reaction to teaching" (Zimmerman, 2000). By developing ATL skills and the attributes of the learner profile, DP students have the opportunity to become "self-regulated learners" (Kaplan, 2008). Self-regulated learners know how to set learning goals, ask good questions, self-interrogate as they learn, generate motivation and perseverance, try out different learning processes, self-monitor the effectiveness of their learning, reflect on achievement, and make changes to their learning processes where necessary (Zimmerman & Schunk, 1989; de Bruin et al., 2011; Wolters, 2011). Thus, we can see reflection on achievement is vital among self-regulated learners and to become self-directed learners, developing ATL skills are essential, which in turn paves way for 21st Century curriculum and instruction. Added to it, the emphasis of International Baccalaureate in integrating technology in teaching and learning is also pertinent in the context of gaining 21st century skills among the digital learners as they insist ICT in teaching and learning. This is captured clearly in the IBO publication where they are seen encouraging ICT in Teaching and Learning (IBO, 2009, p. 13):

1. Information literacy, in the broadest sense, is a competence that students need to develop as part of learning how to learn.
2. ICT provides a rich environment for learning beyond the classroom. Therefore, the development of virtual learning environments should be encouraged as a means to enhance access to course materials and to extend collaborative learning.
3. ICT provides unique opportunities for creative learning through student collaboration and the use of digital media products.
4. ICT can be effectively used in supporting the school's assessment policy, particularly in formative and peer-evaluation activities.
5. ICT plays a critical role in accessing IB networks and communities of practice. Increasing access will support programme implementation, creative teacher professionalism and student learning.

The international baccalaureate programme offered by University College Fairview provides opportunities for the pre-service teacher and fresh graduate to become skilled IB teachers by imbibing the qualities of 21st century teaching and learning skills. As such, carefully designed curriculum in their Postgraduate Diploma in Education (IB), has given opportunities for these young pre-service and fresh graduates to become trained IB teachers. As already captured, reflection on achievement is vital among self-regulated learners which in turn paves way for 21st Century curriculum and instruction, in this study, an attempt has been made to capture from the Students reflection of their understanding of 21st Century teaching and learning during the Postgraduate Diploma in Education in the International Baccalaureate Programme PGDE (IB).

DATA SOURCE

The Postgraduate Diploma in Education in the International Baccalaureate programme has 9 courses which consists of 3 core courses, 4 major IB courses and 2 research based courses. Data for this study were gathered from the reflection from the ETLA – 7113 (Teaching and Learning in Action) a 3 credit course. Two tasks in this course were considered as primary data for this course. The two tasks were as follows:

TASK 1: (Reflection on 21st Century skills)

Discuss how you engaged your students in the activities you developed for the lesson integrating the 21st Century skills you chose and how you addressed diversity of the students in your classroom (not more than 1500 words).

TASK 2: (Reflection on Assessment)

- (a) Describe how you designed the assessment for learning in the lesson you conducted which you had incorporated the 21st Century Skills; and
- (b) Analyse your assessment approach or data, explaining the strengths and limitations of the approach/data and its implications for future instruction (not more than 1500 words).

METHODOLOGY

The focus of this study was to determine how far the students undergoing the Postgraduate Diploma in Education in the International Baccalaureate Programme have been empowered to understand the 21st Century skills to successfully include them in their teaching and learning. An action research was conducted using qualitative data analysis. Data from fifty students enrolled in the ETLA – 7113 course of the Postgraduate Diploma in Education in the International Baccalaureate programme under 2 years part-time mode were used in this study. Qualitative analysis which were analysed in this study were from data source captured from the reflections from the students assignment tasks and mentor observation form of the ETLA course, which was of 3 credit hours and met for 14 hours per semester. The assignment tasks were analysed based on the P21 Framework for 21st Century Learning as shown below:

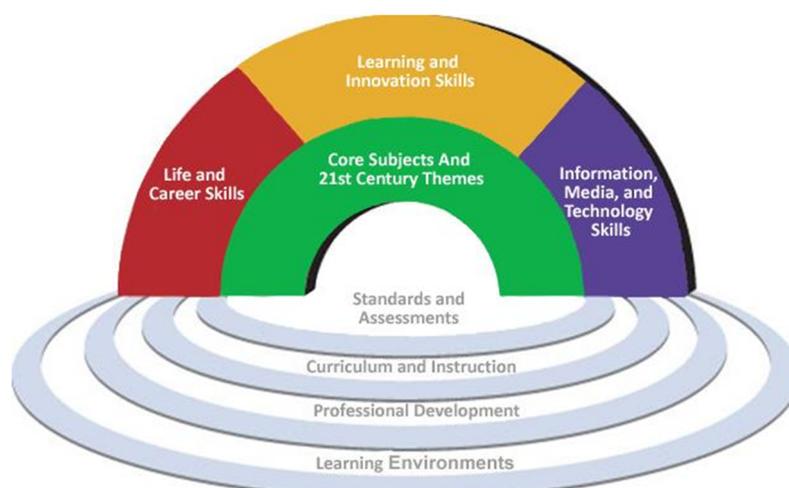


Figure 1 - P21 Framework for 21st Century Learning

Figure 1: P21 Framework for 21st Century Learning

For the purpose of this study, we will use the above P21 Framework for 21st century learning, established by Partnership of 21st Century Learning (<http://www.p21.org/ourwork/p21-framework>). The framework outlined four significant areas that students in the 21st century would need to master which includes: 1) key content knowledge, 2) learning and innovation skills (inclusive of critical thinking, communication, collaboration and creativity). 3) information, media and technology skills 4) life and career skills.

DISCUSSION AND FINDINGS

In this section, the findings are discussed based the 4 significant areas that students would need to master 21st century skills, namely, 1) key content knowledge, 2) learning and innovation skills (inclusive of critical thinking, communication, collaboration and creativity)3) information, media and technology skills 4) life and career skills. The students assignment task were examined to measure to what extent the above 4 areas were included their classroom. In this context, the following students reflections have clearly captured the 21st century skills by exhibiting their evidence during classroom intervention as follows:

S4: Project based learning which incorporates collaboration and communication of the 4 C's concept, is an inventive method of learning where students reflect their knowledge of the content (Bell, 2010). Students were placed in teams for this activity so that they could collaborate and communicate with peers. A representative was picked to communicate his or her ideas of the construction of the model to the rest of the class. This task was achievable for all the students and easily solved by proficient learners.

It is clear from the above that the student has clearly used the 4C' concept which aligns with that of the 1st and the 2nd area of the P21 framework for 21st Century Learning skills.

Evidently, there were 32 out of the 50 students who had clearly used the key concept knowledge along with that of the 4C' concept in their teaching and learning. One of the most significant evidence of using this area was seen the following students assignment task where he had clearly exhibited the usage of 21st century skills during his classroom teaching.

S1: In addition, the 21st century skills that were added into this task. However, in this lesson the students were targeted to cove the lesson no3.3.6 Technology and the marketing mix, the marketing mix refers to the 4Ps which are Product, Price, Place and Promotion as an ingredient. The students were anticipated to imbed the technology perspectives including but not limited to: the 4Cs of the 21st Century skills, information technology, media, promotion skills and life/career prospects in this lesson. Throughout the class, students were given time to think of a product that customers might spend money regularly on it such as a type of sweet product or a visit to the cinema, or games or some certain groceries. Therefore, the students have to make an analysis using the technological advancements in the 21st century to measure how effective is the marketing mix for this product? The students in this process were in a complete awareness of the objective of this work through the selected products as each product has to be selected individually as illustrated in the lesson plan. Figure below provides information about the 4Cs practices and integrating to the 21st Century skills throughout the integration process into the lesson.

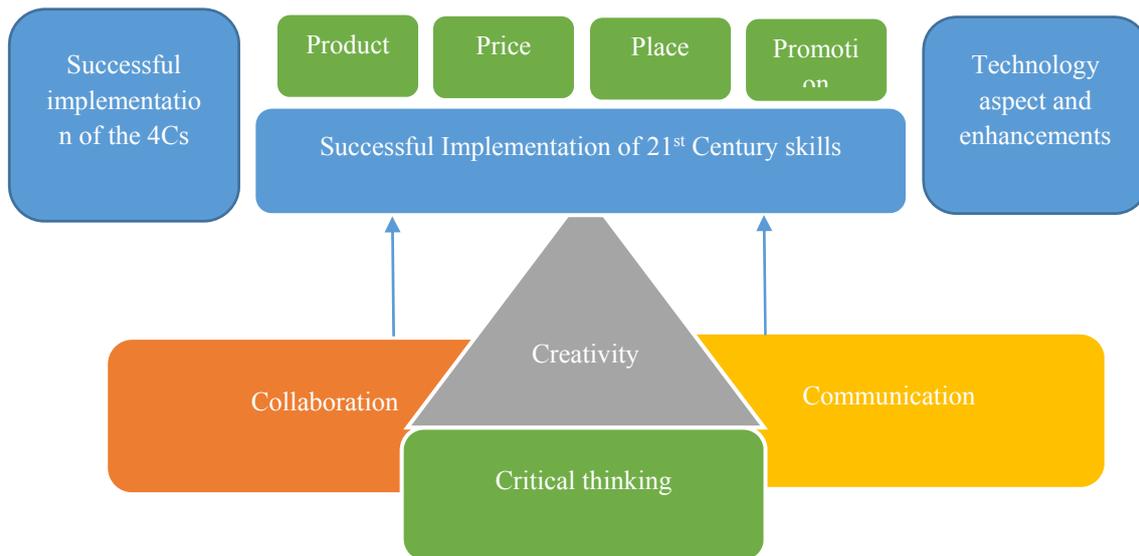


Figure 2: An illustration for the 4Cs practices and integrating to the 21st Century skills throughout the integration process into the lesson

Similarly, as much as 46 out of 50 students have clearly shown evidence of having used the Information, Media and Technology skills, which is the area 3 under the 21st century skills mentioned in the P21 framework for 21st Century Learning skills. The following are some of the student's reflections.

S7: The use of technology in integration of 21st century skills was inevitable in this situation as research was based on online resources (Ruggiero & Mong, 2015). As a teacher, throughout my lesson, I guided and monitored usage of their laptops to research on information on bibliography. My aim to meet the lesson objectives achieved a fairly good success rate. The students got to know what a bibliography is, how important it is to apply it in their own work, and to practically apply it in their newspaper articles.

There were also evidence from students for having incorporated some of the components of area 2 in the P21 framework for 21st Century Learning skills, such as critical skill based activities into the information, media and technology skills area as shown in the following students reflection.

S12: In the second half of my music conceptual lesson, the students were separated into groups of four and use their digital tools to research on the songs they have chosen. Through this activity, students were able to decide freely on the app or search engine they prefer to find the information needed to complete the task. Besides that, critical thinking skills are also integrated in this activity. With the massive information on the internet, students are required to think critically while filtering unwanted information and synthesizing useful ones.

The final area the P21 framework for 21st Century Learning skills, namely, the life and career skills were exhibited among 32 out of 50 students reflection. This was evident from the following students reflection which were few taken from the 32 students reflection.

S34: This was implied in the lesson conducted when 'Yellow Thinking Hat' concept were used to magnify the benefits of learning angles and its implementation in day-to-day life which helps learners to effectively analyse and make connections. Besides that, learners were given a set of questions to identify types of angles and techniques to reason and justify effectively.

Similarly, another student had captured the life and career skills within the classroom activity which has been found recorded in the reflections section as follows:

S24: Specifically, a few students came from the mainland China had difficulty to converse in English because it was not part of their culture. Due to that, differentiated instruction was given. By taking into account their English language ability, they were only required to replace gerunds or infinitives from sample sentences given. Meanwhile, advanced learners were instructed to construct new sentences. Once students had obtained a certain level of mastery, the level of difficulty was raised gradually. Noticeably, students with language barriers managed to showcase more confidence in communicating towards the end of the lesson.

From the above reflection of student (S24), we can clearly see that the student is able to demonstrate the use of key content knowledge with that of the life and career skills. This is because, English language communication skills, has been regarded a key content knowledge in the 21st century skills (Mohd Ali et al. 2018) and this supports the employability skills enabling the learner to withstand the increasing levels of competition at every phase of life. Added to it, English, being the source of language proficiency, facilitates and enhances other required skills like soft skills, presentation skills, and, above all, communication skills (Bharathi, 2016). Thus, it is clear that the student (S24) had a clear knowledge of the 21st century learning skills, and able to use them in her classroom activities.

From the above discussions, the study reveals that the course assignment ETLA-7113 for the Postgraduate diploma in Education in the International Baccalaureate programme students were appropriately set for the students to capture the 4 essential areas from the P21 framework for 21st Century Learning skills, namely, 1) key content knowledge, 2) learning and innovation skills (inclusive of critical thinking, communication, collaboration and creativity), 3) information, media and technology skills 4) life and career skills. While majority of the students in the programme have demonstrated their understanding in the area three at (92%), there were at least 64% of the students who had demonstrated their understanding in area one and two. While 50% were able to demonstrate their understanding in the last area 4 (life and career skills). The Figure 3 below shows the consolidated diagrammatic representation of the students' understanding in all the 4 areas based on the P21 Framework of 21st Century learning skills.

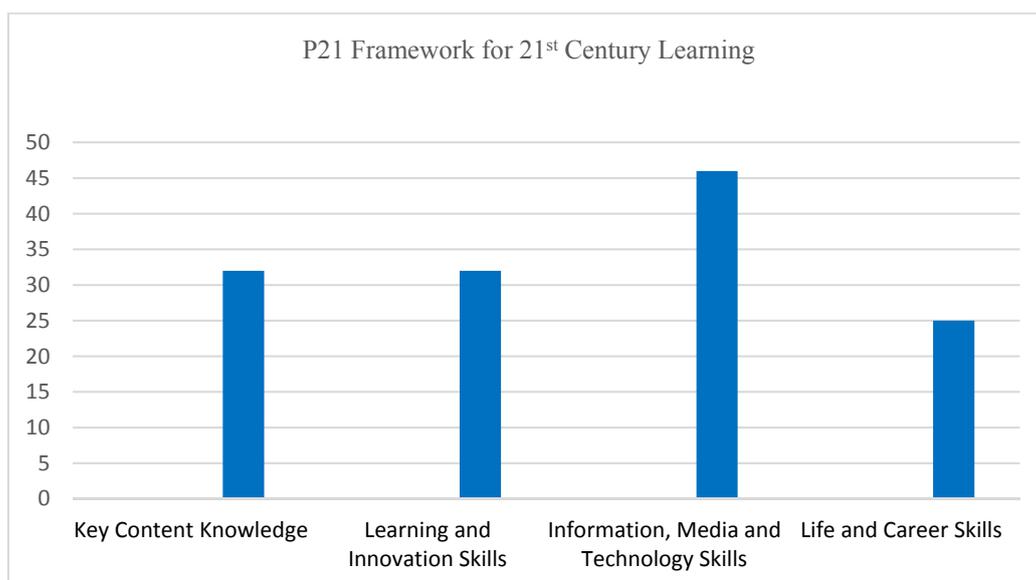


Figure 3: Students attainment using the P21 framework for 21st Century Learning Skills

From the above data, it is evident that 67.5 percent of all the students were able to demonstrate the understanding of the 4 areas pertaining to the p21 framework for 21st Century learning skills. This finding of 67.5% seem to be a reasonable percentage for the course ETLA – 7113, as this course is conducted at the beginning of the entire 2 years PGDE (IB) programme and the mastery of the courses is not expected from these new students who have just started their career as teachers. This findings also needs to be seen in the light of the fact that although information, media and technologies are important in 21st century skills, the abundance of information does not mean it is sufficient for 21st century skills. Instead, it requires individuals to develop skills with which to use information effectively (Ledward & Hirata, 2011). Thus for an individual to reach to the mastery level, it may need some time for adjustment and hopefully, these students will gain these expertise of integrating 21st century skills in their teaching by the end of the Postgraduate diploma in Education in the International Baccalaureate programme.

CONCLUSION

The final section must summarise the research objectives, method, and findings to highlight the contribution of the article to the field of study. It must be written in a single paragraph and in a succinct manner.

ACKNOWLEDGEMENT

The international baccalaureate programme offered by University College Fairview provides opportunities for the pre-service teachers and fresh graduates to become skilled IB teachers by imbibing the qualities of 21st century teaching and learning skills. In this article, an attempt has been made to capture as to how much of the 21st century teaching and learning skills these future teachers can demonstrate during the delivery of their classroom teaching. This details were captured from the student reflection in the Assignment tasks for ETLA – 7113 course of the Postgraduate diploma in Education in the International Baccalaureate programme. The findings of this study clearly indicates that on an average, 67.5 percent of the students who were undergoing this course where able to demonstrate their understanding in incorporating 21st century teaching and learning in their classroom teaching. A further study may be required at the end of the programme to ascertain if the level of these students during and after the programme has significantly improvement on the integration of 21st century teaching and learning skills during their classroom teaching.

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ENHANCING LEARNING ENVIRONMENT USING AUGMENTED REALITY TECHNOLOGY

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ABSTRACT

The conceptual and technological design review starts with understanding the history and background of instructional design and instructional technology. From the theoretical studies a new understanding of design and technology cannot be separated as an application or tool to enhance learning environments in class or outside. The popularity of augmented reality game entitled “Pokemon Go” spark a worldwide phenomenon on using mobile phones device to track down “Pokemon” characters within the limited range of the user’s vicinity in the year 2016. The augmented reality game function is use the mobile phone’s camera to overlay the “Pokemon” onto the actual surrounding environment of the real world. Players can interact and collaborate to try and catch them. In this article, we first provide an overview of augmented reality definitions, design principles in education, and promoting the use of augmented reality technologies to enhance the learning environment. We argue that viewing augmented reality as a concept rather than a type of technology would be more productive for educators, researchers, and designers. We identify certain features and affordances of augmented technologies and applications. However, the features could not be unique to augmented reality applications and can be found in other technological systems or learning environments (e.g., ubiquitous and mobile learning environments). The instructional approach adopted by an augmented reality technology and the streamlining of technological design, instructional approach, and learning experiences may be more important. Therefore, we classify three categories of instructional approaches that emphasise the “roles” and “locations” and discuss what and how different categories of augmented reality approaches may enhance the learning experience. While augmented reality offers new learning opportunities, it also creates new challenges for both learners and educators. We highlight technological, pedagogical and learning issues related to the implementation of augmented reality in education.

Keywords: *Augmented Reality, Augmented Reality Technology, Instructional Approach, Learning Environment, Learning*

INTRODUCTION

Augmented Reality (AR) is an emerging technology in the field of educational technology that utilises mobile devices (e.g., smartphones, tablets) that enable users to interact with digital content overlay within the real-life physical space area. There are two types of AR formats available for instructional designers: (i) place-based and (ii) visual-based. Place-based AR uses Geographical Positioning System (GPS) available in all smartphones and tablets to present digital media to learners as they navigate physically (e.g. walking along a road) through a real-life physical space area. The multimedia content (i.e., words, graphics, sound, video, 3-D models) are activated and oriented via GPS and compass technologies to augment the physical environment with narrative, navigation, and/or academic information pertaining to specific geographical location within a limited distance. In contrast, visual-

based or target-based AR displays digital contents to learners when or after they point the camera in their mobile device at a specific object or target (e.g., QR scan code, 2-Dimensional or 3-Dimensional target).

These two forms of AR (i.e., place-based and visual-based) make use of the smartphone capabilities (i.e., GPS, compass, digital camera, object recognition and tracking) to create “immersive experience” and context sensitive learning experiences within the physical environment so called situated learning, providing instructional designers with a unique and transformative application tool for providing innovative ways for teaching and learning (Azuma et al., 2001; Dede, 2009b; Dunleavy & Dede, 2014; Johnson et al., 2011; Klopfer et al., 2002). This overview of AR design principles will focus on specific strategies that instructional designers can use to develop AR learning experiences. For example at the Radford University, these principles are contextualized within specific AR games or experiences developed by the Radford Outdoor Augmented Reality at Radford University (ROAR). The university published, *Augmented Reality Teaching and learning*, provides more depth on many of these design issues at a conceptual level reported by (Dunleavy & Dede, 2014). Based on the literature review in this area, there are three design principles emerging as instructive:

1. AR learner interaction and collaborative learning (collaborative interaction).
2. AR gamification (games).
3. AR affordance for visibility of observation and information (affordance by context).

These design principles can be viewed as an attempt to either utilising the unique affordances of AR or minimise the limitations of the AR medium as reported in the literature (Dunleavy & Dede, 2014).

LITERATURE REVIEW

Most Frequently Studied Research Areas AR Design in Learning

One of the most frequently reported AR design challenges is on preventing student cognitive overload during the AR experience (Dunleavy et al., 2009a; Klopfer & Squire, 2008; Perry et al., 2008). In a typical setting of research on AR learning experience, learners are required to simultaneously manipulate the mobile device, navigate to each location, interpret the content presented via the narrative, and collaboratively solve problem (Dunleavy et al., 2009b). Therefore, using design strategies that enable learners to access and process the content and the activities within the AR experience, then challenge them to interact and collaborate with high-level thinking problems are critical.

Trends in Design Principles in AR

The three design principles in AR are:

First Design Principle: Learner Interaction and Collaborative Learning

As the two-person teams to explore the replica village, they are prompted to observe and interact with the environment. They are also required to work collaboratively to find key information that is embedded digitally within the environment. As a result of the technology (1-to-1 device-to-student ratio) and the design, educators can use AR to present learners with incomplete, yet complementary perspectives on the same physical environment thereby incorporating and supporting collaborative pedagogical techniques such as differentiated role play, reciprocal teaching and other aspects of socio-cultural learning. This ability to scaffold and support positive interdependence to accomplish an

objective situated within a physical space is the most frequently reported affordance of AR (Dunleavy et al., 2009a, 2009b; Facer et al., 2004; Klopfer & Squire, 2008; Perry et al., 2008; Squire, 2010; Squire et al., 2007).

Second Design Principle: AR Gamification

The second design principle that aligns well with the affordances of AR is to drive the player interaction and learning through gamified stories or narratives. The story or narrative provides the structure and rationale for the AR experience, and it has a profound impact on the quality of the experience (Klopfer & Squire, 2008; Perry et al., 2008). AR enables instructional designers to create interactive stories where students collect and synthesize different pieces of information that are distributed across and embedded within the physical environment (Squire et al., 2007). By combining gamification elements, such as scoring systems or fail states, to an immersive narrative, the AR designer can leverage two of the most engaging elements of multiple genres (e.g., historical fiction, role playing games) while also reinforcing the learning objectives.

Third Design Principle: AR Affordance for Visibility of Observation and Information

The third design principle that aligns well with AR affordances is the ability to make visible the otherwise invisible. In essence, the mobile device becomes a focal glass through which students can see elements of the environment that would otherwise remain hidden. The mobile device as a lens rather than a screen is a critical design metaphor as several studies have documented that students have the tendency to become fixated on the mobile device rather than observing the environment (Dunleavy et al., 2009a; Dunleavy & Simmons, 2011; Perry et al., 2008; Squire, 2010). While place-based and visual-based AR can provide powerful and compelling experiences, it is critical that designers do not create experiences where the technology becomes a barrier to the environment. Rather the technology needs to drive the students deeper into the authentic observation and interaction with the environment and with each other if AR is to grow beyond a novelty technology. The use of AR to make visible the otherwise invisible as represented in this condor example is one possible approach that needs to be more fully explored.

Trends of AR for Learning Approaches

Many types of instructional and learning approaches are implemented in the design of AR learning environments, including game-based learning (Rosenbaum et al., 2007; Squire & Jan, 2007; Squire & Klopfer, 2007), place-based learning (Klopfer, 2008; Mathews, 2010), participatory simulations (Klopfer & Sheldon, 2010; Rosenbaum et al., 2007; Squire & Klopfer, 2007), problem-based learning (T.-Y. Liu et al., 2009; Squire & Klopfer, 2007, p. 375), role playing (Rosenbaum et al., 2007), studio-based pedagogy (Mathews, 2010), and jigsaw method (Dunleavy et al., 2009a). Different categories of AR (e.g., mobile-AR, game-based AR, and multiplayer AR) offer different affordances to support the implementation of these approaches. The most critical features of the approaches, we classify the instructional approaches into three major categories: approaches emphasizing engaging learners into “roles,” approaches and emphasizing learners’ interactions with physical “locations”. Each approach may include several learning approaches, and that some sub-approaches may overlap. Also, approaches across different categories may share a similar philosophical ground or an educational psychology point of view.

Emphasizing the Learner Roles

Strategies emphasizing engaging learners into different roles in an AR environment included participatory simulations, role playing, and jigsaw approaches. Because these approaches emphasize the interactions and collaboration among students, they are usually associated with mobile-AR, multiplayer AR, or game-based AR. Collaborative simulations can be defined as allowing “different players to function as interacting components of a dynamic system” and the results from interactions among students affect the outcomes of the AR learning system (Klopfer & Squire, 2008, p. 225). An illustrative example of collaborative simulations shown in the Virus outbreak game in which students played as viruses as infectious disease transmission (Klopfer et al., 2004). Students as players transmitted information to each other using mobile phone devices to simulate the process of infecting each other as an outbreak situation (e.g. of situated learning). Additionally, in specific AR environments, students have specific and variety of roles to play in order to develop in-depth learning and understanding about their roles in relation to the topic. For example, in (Squire & Klopfer, 2007), students were given roles as environmental scientists, activists, and investigators to learn the socially situated nature of scientific investigations. Students not only participated in simulation but also adopted different ways of thinking or able to search and query information relevant to their roles while playing the multiple roles. Furthermore, a jigsaw approach focuses on collaborations among different roles so that students could complete tasks through role playing. In this kind of design, students who play different roles are given unique pieces of information. It relies on collaboration or jigsaw among different roles of a team to solve a problem together (Dunleavy et al., 2009a).

Emphasizing the Learner Locations

Place-based or location-based learning emphasizes learners’ interactions with the physical environment so mobile-AR with location registered using Geographical Positioning System (GPS) technology is a common component used for this approach. AR environments that take these approaches exploit the advantages of mobile technologies because mobile devices make it possible for computer servers to track learners’ actual geological location (De Lucia et al., 2012). Through mobile devices and geological positioning systems, learners have access to relevant information as they arrive at certain locations (Klopfer, 2008). The place or location for AR can be, for instance, a school campus where students actually study or the actual neighbourhood where the school is located. One of the potential benefits of place-based learning is to bring a sense of authenticity to students. Students may feel more grounded in “reality” as they work in a physical area or move through an actual environment (Rosenbaum et al., 2007). Also, when becoming familiar with the actual environment and making informed decisions about environmental issues are important learning goals, they can be realized by having students collect data or investigate issues at different locations of the actual environment. However, a common challenge of place-based learning is that students need to cope with the constraints of the actual environment (Klopfer & Squire, 2008).

AR Technology Enhancing Learning Environment

What and how do students learn in AR learning environments? Research has indicated that AR systems and environments could help learners develop skills and knowledge that can be learned in other technology-enhanced learning environments but in a more effective way (Dunleavy, 2010), used AR systems to present lessons in a 3D format so learners could virtually manipulate a variety of learning objects and handle the information in a novel and interactive way. AR environments can also facilitate skill acquisition. In (Klopfer, 2008), AR mobile games allowed learners to organize, search and evaluate data and information; therefore, learners’ skills in navigating primary and secondary data could be developed through these games. A new set of skills that are important and essential in an information-based economy can also be promoted in AR learning environments (Mathews, 2010), (Rosenbaum et al., 2007). For example, (Rosenbaum et al., 2007) showed that the sense of authenticity offered by an AR learning environment promoted learners’ understanding of dynamic models and complex causality. Furthermore, AR environments could increase students’ motivation and interest, which in turn may help

them develop better investigation skills and gain more accurate knowledge on the topic (Dunleavy & Simmons, 2011). Specifically, students' spatial abilities can be improved after using immersive and collaborative AR applications (Dunleavy & Dede, 2014), (Facer et al., 2004), (Dede, 2009a). Various teacher-student interaction scenarios could also be supported by AR systems, thus maximizing transfer of learning ((Dede, 2009b), (Kaufmann & Schmalstieg, 2003b)). Another new set of skills that could probably be promoted in AR are psychomotor-cognitive skills because AR could make use of visual cues as well as haptic cues to enhance users' experiences (Dunleavy et al., 2009a). (Dunleavy, 2010) showed an AR system in clinical medicine that embedded touch-sensors in a physical environment, collected sensor data to measure learners' performances, and then transformed the performance data into visual feedback. By using this AR system, learners could receive real time, in-situ responses that may help improve their performances and enhance their psychomotor skills in a cognitive task. In addition, AR systems provide solutions for learning difficulties that have been identified in previous research. For example, students usually encounter difficulties visualizing unobservable phenomena such as spinning of the earth (Dunleavy & Simmons, 2011). AR allows learners to manipulate virtual objects or observe phenomena that may not be easily seen in a natural environment (e.g., ecosystems of wetland or life cycles of wetland creatures). These learning experiences in turn could promote learners' thinking skills and conceptual understandings about invisible phenomena (T.-Y. Liu et al., 2009) and correct their misconceptions (Sotiriou & Bogner, 2008). Although so far a majority of AR systems have been developed for teaching science and mathematics because learning these subjects require visualization of abstract concepts, there were also a few systems designed for students with special needs and language learning. For instance, (T.-Y. Liu, 2009) constructed an AR learning environment with a context-aware learning game to help students overcome learning barriers and effectively improve learners' English speaking and listening skills. Furthermore, AR environments promote important practices and literacies that may not be developed and enacted in other technology enhanced learning environments (Squire & Jan, 2007), Squire (Squire & Klopfer, 2007). The AR game in (Squire & Jan, 2007) provided students with opportunities to experience how scientists think and do, and to apply their scientific understandings to resolve current issues happening in their local community. (Squire & Klopfer, 2007) also suggested that AR games could activate learners' prior knowledge, connect prior knowledge to the physical world, and engage students in academic content and practices. In the next section, we discuss technological, pedagogical, and learning issues related to the implementation of AR in education and provide possible solutions for some of the issues.

AR Technological, Pedagogical, and Environment Learning Issues

Technological Issues in AR Environment

As mentioned previously, one type of AR technologies includes a head-mounted display and/or an additional backpack with computer equipment. The cumbersome and expensive design could cause problems such as discomfort and poor depth perception (Kerawalla et al., 2006). To avoid these problems, current development of AR systems adopts portable technologies that are less obtrusive and enhance a sense of immersion and presence. Yet, these systems integrate several hardware and software devices and lead to issues like interfacing between multiple devices (Klopfer & Squire, 2008) and stability of the devices (Dunleavy et al., 2009a), (Squire & Jan, 2007). Without well-design interfaces or protocols to guide students' actions, students could have difficulties in interpreting the clues in the devices and the real-world environment, recognizing the information flow from one device to another, and navigating between fantasy and reality (Squire & Jan, 2007). Additionally, the more the devices used, the greater the risk of device failure. How to maintain high stability of multiple devices becomes critical. In (Dunleavy et al., 2009a), GPS errors caused students' frustration and were identified by teachers as a highly problematic issue. Fortunately, the issues of device integration and stability could be solved by the recent rapid advancement in portal and wireless technologies. The portable devices in AR systems will be more and more integrated and reliable when running simulations, games, videos, and GPS applications. Another issue is regarding a trade-off in technology design between location dependency and independency (Klopfer & Sheldon, 2010). While location-specific technologies contextualize students' learning, provide a connection to a particular location, and help students give

new meaning to their familiar locations, location-independent design has advantages in portability and flexibility that does not require teachers and students to be present in specific locations and could save great cost on transportation. To balance the two approaches, educators and designers may consider a design that not only connects to real-world locations but also includes important features that can be commonly found in other locations (Klopfer & Sheldon, 2010). TimeLab 2100 is an example that integrates portability with location specificity and provides generic real-world locations (e.g., a school and a bus stop) so students could find local substitutes for their learning needs.

AR Implementation Pedagogical Issues Relating to Learning Environment

There are also pedagogical issues that need to be taken into consideration when AR systems are implemented in classrooms. First, like many educational innovations in the past, the use of AR in classrooms could encounter constraints from schools and resistances among teachers. The learning activities associated with AR usually involve innovative approaches such as participatory simulations and studio-based pedagogy. The nature of these instructional approaches however is quite different from the teacher-centred, delivery-based focus in conventional teaching methods (Kerawalla et al., 2006), (Mitchell, 2011), (Squire & Jan, 2007). Institutional constraints such as covering a certain amount of content within a given time frame also cause difficulties in implementing innovations (Kerawalla et al., 2006). Thus, there may be a gap between the teaching and learning methods currently used in classrooms and the students-centred and exploratory nature of learning engendered by AR systems. Designers of AR learning environments need to realize the gap and provide possible support to help teachers and students bridge it.

A second issue involves instructional design. In the design of learning activities and AR systems, how should the information be distributed and flowed between two realities and among different devices? As (Klopfer & Squire, 2008) indicated, “how to balance competing drives for individuality with distribution and decentralized information flows with guided educational activities may be tensions central to the platform” (Klopfer & Squire, 2008, p. 205). A set of design guidelines based on learning theories (e.g., distributed cognition and situated learning) and empirical evidence would be useful for educators and designers to resolve this conflict.

Another pedagogical issue is regarding the inflexibility of the content in AR systems (kerawalla et al., 2006). In some AR systems, the content and the teaching sequence are fixed; teachers are not able to make changes to accommodate students’ needs or to accomplish instructional objectives. This issue could be resolved by the use of authoring tools (bergig et al., 2009), which allow teachers and students to revise and create AR activities and applications (Klopfer & Squire, 2008).

Research Methodologies Comparison and the Future of Research for AR for Technology in Educational Practice

As mentioned previously, our analyses and discussions of quantitative studies in AR indicated that while augmented reality can be created by integrating multiple technologies and have a great potential to support learning and teaching, there are many issues to consider when AR is implemented in educational settings. In Addition, these quantitative studies have limitations in terms of research design and evidential validity. Compared to studies of other more well-known technologies in education (e.g., multimedia, and web-based platforms), research of AR applications in education is in an infant stage, and evidence of the effects of AR on teaching and learning appears to be on the surface. Many studies of AR still focuses on development, usability, and initial implementation of AR tools (Argotti et al., 2002; Blake & Butcher-Green, 2009; El Sayed et al., 2011; Kaufmann & Schmalstieg, 2003a). The main theme among the quantitative studies in AR is that the research design of these studies is relatively simple, short-term, small-sample in qualitative exploratory nature. Several studies were at an early stage of development and relied on learners’ self-reports of usability, preference, and efficiency to evaluate the learning effects, such as studies of ARSC (El Sayed et al., 2011), Construct3D (Kaufmann & Schmalstieg, 2003a), and CONNECT (Arvanitis et al., 2007). Additionally, the methods used are

mainly design-based research (Klopfer & Squire, 2008) and case studies (Dunleavy et al., 2009a; Squire & Klopfer, 2007). There are few exceptions, such as the quasi-experimental design employed in (Hsiao et al., 2012; Kaufmann & Schmalstieg, 2003a; T.-Y. Liu, 2009). Therefore, to provide more strong evidence on the educational values of AR, controlled and comprehensive evaluation studies that include a large sample and valid instrumentation are needed. Additionally, to highlight the features and affordances of AR, researchers should also continue identifying effective processes and technology characteristics that can be offered by AR but not possible with other learning media or technology or concepts to show academic values unique to AR learning environments. The quantitative evidence from these studies could improve on theories and help generate a set of instructional patterns and design principles of AR environments that could provide guidance to resolve the issues involved in instructional design. For example, (Enyedy et al., 2012) outlined two design principles for design augmented reality activities in learning physics:

- (i) Using embodied play and participatory modelling to support science inquiry.
- (ii) Supporting progressive symbolization within rich semiotic ecologies to construct meaning.

They acknowledged in the study of their one group pre-test to post-test design did not allow them to systematically investigate some aspects of their design and intended to employ other experimental designs to provide more evidence to justify their principles. Other productive research topics include identifying instructional factors and conditions that affect the effectiveness of an AR system e.g. (Sotiriou & Bogner, 2008) and examining the role of individual differences in learning with AR e.g. (Chen & Tsai, 2012).

Furthermore, future research that includes in-depth analyses of how AR environments support learning and teaching creates opportunities for researchers to re-conceptualize important notions in education such as contextualization, authenticity, and engagement.

Table 1: Streamlining of Instructional Approaches, Affordances and Learning Concepts in Education

Instructional Approaches	Affordances	Learning Concepts
Emphasizing the learner roles	Learners' experiences presence, immediacy and immersion	Engagement
Emphasizing the learner locations	Situated, collaborative and ubiquitous learning	Contextualization
Emphasizing the learner tasks	Learning material content developed in 3-Dimensional Visualizing the invisible in reality	Authenticity

Table 1: Adapted and modified from (H. -K. Wu et al., 2013, p. 48)

Table 1 suggests the possible alignments of instructional approaches, affordances and notions in education. Approaches emphasizing engaging learners into different roles in an AR environment included participatory simulations and role playing. These AR environments emphasize learners' participation in different roles and could improve the sense of presence, immediacy, and immersion. For example, role playing in AR allows students to experience immersive games and includes a more comprehensive and realistic experiences achievable only in a mixed reality environment. These new learning experiences could lead to transformation of emotional, behavioural and cognitive engagement (H.-K. Wu & Huang, 2007) which can be further documented and generate new theories in educational research. Furthermore, location-based learning approaches emphasize on how learners' interactions

with the physical environment. Previously mentioned, the use of the location-based approaches and mobile phone technologies in AR could bridge the gap between formal and informal learning and afford ubiquitous, collaborative and situated learning (in Table 1). The alignment of location-based instructional approaches with the affordances of AR may create the outcome of reconceptualization which has been defined as “utilization of particular situations or events that occur outside of class or are of particular interest to students” (Rivet & Krajcik, 2008, p. 80). Because the combination of location-based learning and AR technologies are borderless between inside and outside of the class and between formal and informal learning settings, where a context is and what it means by contextualization may be re-defined according to the location the learner is studying.

There are also research topics and issues regarding instructional design and implementation. Previously, a great number of AR systems were designed for teaching science and mathematics in class, so future research requires the development of substantial digital educational content on AR systems platform for teaching and learning environment. In addition, more educational researches are needed to examine the learning effects of AR. Moreover, because of the gap between the traditional teaching methods in classrooms and the exploratory features of learning spearheaded by AR systems, researchers need to explore the possibilities and solutions of integrating AR into higher education curriculum. One solution may be providing substantial support for teachers to customize AR technologies, to create personalized learning activities, and to monitor students’ learning progress in AR environment.

Using the Conceptual Model Situated Learning in Exploring the Use of AR Technology in Enhancing the Learner Environment

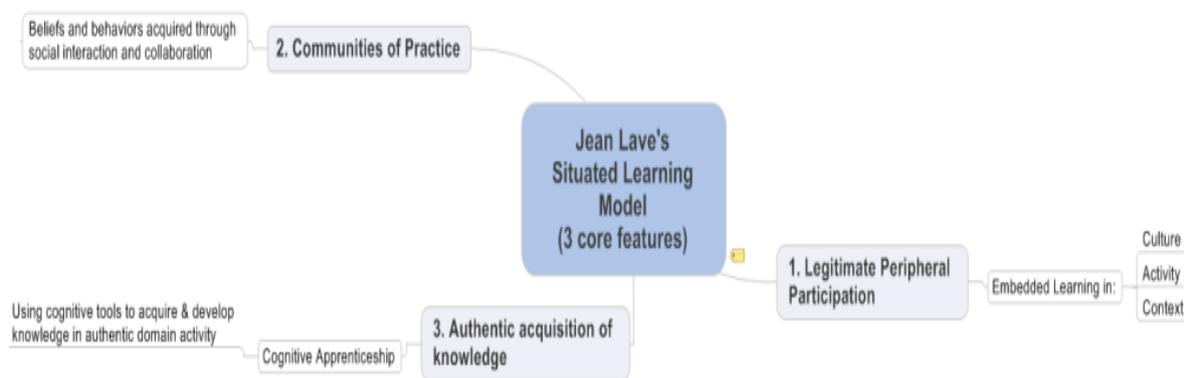


Figure 2: Mind-map Created from Situated Learning Book by (Jean & Etienne, 1991)

Figure 2. The next research study to be conducted will be exploring and investigating the effects of AR design and technology in situated learning environment as the conceptual model.

CONCLUSION

The use of AR relates the learner within a real-world physical and social context, scaffolding and facilitating participatory and metacognitive learning processes such as authentic inquiry, interaction and collaboration, participative learning, reciprocal teaching and legitimate peripheral participation with multiple modes of representation. (Dunleavy et al., 2009a; Klopfer & Sheldon, 2010; Palincsar, 1998; Squire, 2010). As a result, AR is well streamlined with situated learning and constructivist learning theory as a cognitive learning tool or pedagogical approach by teachers. While AR has the potential to enhance certain areas of learning, it is also important to remember that this is one application of technology in education among a variety of technologies which educators, designers and researchers need to explore and further investigate the proper use and streamlining it with the correct approaches for effective instruction (e.g., repetition of a key skill set). As the field progresses and more research

teams explore the potential of AR to enhance teaching and learning environment, it will be critical to determine the AR design techniques which fully utilize the novel affordances of AR, reducing the limitations of the digital content medium, and further enhance learning in the new landscape of digital learning environment.

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HEALTHCARE WORKERS' SATISFACTION ON SBAR TOOL FOR HANDOVER IN A PRIVATE HOSPITAL

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ABSTRACT

Nursing handover is indispensable and functions as information exchange, care continuity, and fundamental to safe and quality patient care. Healthcare workers conduct shift handover in a background of chaotic, frequent interruptions, within limited timeframe. Healthcare workers' satisfaction on shift handover directly and indirectly affects the patient's safety and standards of care. Aims: To explore satisfaction on the SBAR tool for handover among healthcare workers in a private hospital. Design: A descriptive cross-sectional study. Setting: A private, multi-specialty hospital (84-bed capacity). Population and Sample: Purposive sample (n = 89) of nurses and PCAs working in all the departments participated with voluntary participation and anonymity ensured, at 72% response rate. Data Collection: Anonymous self-administered questionnaire (Handover Evaluation Scale) with 14-item of 7-point Likert-type scale were returned within a one-week timeframe. Data Analysis: Descriptive statistics on demographics with frequency, percentage, mean and standard deviations. Statistical (inferential) analyses were run on HES responses and correlation with demographic variables. Narrative comments to open-ended questions were analysed qualitatively by summarising key themes. Results: Healthcare workers are found to be satisfied with SBAR for handover, with total score of 71.64 (SD = 8.81) in the range of 14-98. Associations are discovered between certain demographics and respondents' satisfaction. Key strengths and limitations of SBAR, and suggestions for improvements are collected and all the above discussed pertaining to implications. Conclusion: Healthcare workers are satisfied with the use of SBAR for handover. There are associations between demographics with SBAR satisfaction. Key strengths, limitations, and suggestions for improvement in relation to SBAR are discussed.

Keywords: *Healthcare Worker, (shift) Handover, SBAR, Satisfaction*

INTRODUCTION

Documentation represents a crucial and indispensable part of nursing (healthcare workers), especially in clinical practice. It serves as an essential indicator that reflects the quality and standards of care provided to patients (Lindo et al., 2016). Braaf, Riley, and Manias (2015) highlighted in their qualitative study on poor practice of documentation in the perioperative setting, lack of verbal handover, in which could compromise the safety and quality of care patients received. It is highlighted that opportunities for

clinical errors arise amidst the handover process for transfer of care responsibility, if not conducted in a way that share and transfer important information as efficiently (Smeulers, Lucas, & Vermeulen, 2014). Since nurses provide direct bedside or point-of-care, they are in the position to identify and rectify any subtle changes (Collins et al., 2013). It is even stated that nurses might decline to attend patients, not until they receive a formal shift handover, thus reflecting the significance and perceived importance towards handover (Scovell, 2010).

Likewise, Collins et al. (2013) posited from their retrospective study of data mining that nurses' documentation can be associated with the mortality risk prediction as the pattern of records with higher frequency in comments and vital parameters suggesting clinical deterioration of patient's condition. By such means of documentation and followed by handover of patient's condition, it is related to patient's safety as well as staff satisfaction (Nagammal, Nashwan, Nair, & Susmitha, 2017).

A contemporary literature review on documentations by healthcare professional had reported from their review on 59 papers that patient safety is compromised as a result of communication failure, due to disruption in the transfer of information among nurses (Braaf, Manias, & Riley, 2011). This is due to communication breakdown, along with relevant and pertinent clinical information not shared timely (Kear, 2016), which results in adverse incidents, delays for diagnosis and subsequent treatment, inappropriate nursing actions, and even care omission (Smeulers et al., 2014).

In the nursing context, the safety and quality of care patients received is directly associated with the accuracy and comprehensiveness of information transfer at inter-shift handover (Dufault et al., 2010). Hence, it illustrates the crucial role and accountability of nurses in handing over safely regardless of their unit specialty (Kear et al., 2016), especially within a hospital setting.

Objectives

The general objective of this study is to explore the satisfaction level in using SBAR tool for shift handover among healthcare workers of nurses and PCAs (the nursing team) in a private hospital.

Specific Objectives

There are three specific objectives focus on this study as listed below:

1. To examine the satisfaction level in using SBAR tool for shift handover among nurses and PCAs.
2. To determine any associations between demographic variables and nurses/PCAs' satisfactions.
3. To explore the suggestions for improvement on shift handover from nurses and PCAs.

Research Questions and Hypotheses

For the purpose of this study, the following research questions were identified:

1. How satisfied are nurses and PCAs in using SBAR tool for shift handover?
2. Are there any associations between demographic variables and nurses/PCAs' satisfaction?
3. What are the suggestions from nurses and PCAs on the improvement in shift handover?

Based upon the study objectives and research questions, the following null hypotheses were proposed:

1. The nurses and PCAs are NOT satisfied with the use of SBAR tool for shift handover.
2. There is NO significant difference(s) between demographic variables and nurses/PCAs' satisfaction.

LITERATURE REVIEW

Literature highlighted that the use of SBAR is commonly applied between physician and nurses (Staggers & Blaz, 2013), yet the use of SBAR in nurse-to-nurse shift report is scarce and warrant further investigation as to their satisfaction of using the tool in shift handover in view of the significances as reported earlier. Moreover, lack of studies on verbal handover supported by printed forms such as clinical notes were lacking, in which only been reported in one nursing trial, and no single method of handover is superior to one another due to the individual unit differences in context, its nurses' expertise, and patient's conditions (O'Connell & Penney, 2001). Thus, there is no one-size-fits-all handover tool that suits all clinical settings (Anderson, Malone, Shanahan, & Manning, 2014). Such process of handover is said to be enabling opportunity to detect if any errors, and challenged flawed assumptions because of face-to-face instant clarification (Staggers and Blaz, 2013). The instant feedback and reciprocal interactions will allow rapid detection of any errors or issues and solution discussed on-the-spot (Eggins, & Slade 2015). However, this depends on individual unit's culture as some might detect any questioning at all (Scovell, 2010), possibly due to time constraints and workload.

This means lacks of standardized or structured documentation and handover pose a significant barrier towards care planning and delivery. Despite a handful quantity of more than 200 publications in 2010, there are still confusions and struggle towards unanimous safe practice of handover (Girard, 2014), with one reason attribute to standardized handover tool or method due to diverse aspect from one to another (only exchange of information, with other aspects such as unit atmosphere, interruptions, training, and equipment's unaccounted). In addition, Kear and Ulrich (2015) suggest future research in the clinical setting to investigate handover and its related productivity, working environment, and staffing level, which is potentially linked to satisfaction level of nurses.

Theoretical Framework

The theoretical framework underpinning this research undertaking refers to Mania's Communication Model (MCM) (Manias, 2010). Specific for communication, and particular to the healthcare context, this framework enables nonverbal communication through documents and documentation to be explored by way of three interactive dimensions: the socio-cultural and environmental influences, attributes of communication encounter and outcomes of communication (Table 2.1). The model is validated as a middle-range theory with regard to alliance to empirical findings, level of abstract, and its scope (Braaf et al., 2015).

Table 2.1: Mania's Communication Model (MCM) (Manias, 2010)

SOCIOCULTURAL and ENVIRONMENTAL influences	ATTRIBUTES of the communication encounter	OUTCOMES of communication encounter (at handover)
<p><u>Sociocultural and environmental influences</u> on nonverbal communication may include time restrictions, productivity objectives, the type of document or documentation used, or a nurse's area of employment.</p> <p>Number of patients handed over diluted amount of information transferred.</p>	<p>The <u>attributes</u> of nonverbal communication encounters are explored such as timing, accuracy, and completeness of information conveyed are explored.</p> <p>Questioning or clarification during handover.</p>	<p>The <u>outcomes</u> of communication through documents or documentation are considered, such as communication failure, successes and gaps.</p> <p>Ability to transfer correct information between nurses after conduct of handover.</p>

Research Design

In order to meet the research objectives and purpose of this study, the design of descriptive, quantitative cross-sectional survey by means of questionnaire method is deemed as appropriate. Despite quantitative data, which refers to amounts or quantities being advocated as more efficient (Ingham-Broomfield, 2014), as to the hypotheses testing, there is still a risk where contextual details might be overlooked (McCusker & Gunaydin, 2015). Hence, the researcher reinforced this issue with open-ended questions and comment.

The study setting is a private, multi-disciplinary hospital located at the outskirts of Kuala Lumpur, serving the community of Cheras population. It has the capacity of 84-bed occupancy, with multidisciplinary services. Hence, the nursing team of nurses and PCAs working under these departments and unit wards comprise the sample population.

The instrument utilized in this study is a self-administered questionnaire with 7-point Likert-type scale known as 14-item Handover Evaluation Scale (HES, O'Connell, Ockerby, & Hawkins, 2014). The permission to use and modification as per local context had been sought after from the original researcher.

FINDINGS

Research Question 1:

How satisfied are nurses and PCAs in using SBAR tool for shift handover?

Null hypothesis, H₀:

The nurses and PCAs are NOT satisfied with the use of SBAR tool for shift handover.

From the descriptive analysis of results, overall the satisfaction level of health care workers (nurses and PCAs) are found to be positive and moderately satisfied on using SBAR for handover, with a total mean score of $5.12 \pm$ standard deviations (SD 0.63) on a scale on Likert ranging of 1 to 7 (minimum 3 and maximum mean score 6). In addition, total score of satisfaction on SBAR (HES tool) ranges from minimum 40 to maximum 88 (range of 14-98 total score). The mean total score of satisfaction (HES tool) is $71.64 (\pm SD 8.81)$, thus indicating a high degree (moderate to strong level) of satisfaction on the SBAR tool for handover. Hence the null hypothesis is rejected; therefore, the nurses and PCAs are generally satisfied with the use of SBAR.

Table 4.1: Mean (SD) and Percentages of 14-item HES Questionnaire

Item	Statement	Mean (SD)	Dis-satisfaction	Neutral	Satisfaction
			%	%	%
10.	I have the opportunity to discuss difficult clinical situations I have experienced.	5.54 (1.11)	9.0	3.4	87.6
11.	I am provided with sufficient information about patients.	5.63 (0.92)	4.5	1.1	94.4
12.	I have the opportunity to debrief with other colleagues when I have had a difficult shift.	5.37 (1.10)	11.2	3.4	85.4
13.	I have the opportunity to discuss workload issues.	5.26 (1.25)	16.9	0	83.1
14.	I am often given information during handover that is not relevant to patient care.	3.46 (1.57)	61.8	9.0	29.2
15.	The way in which information is provided to me is easy to follow.	5.56 (1.03)	6.7	1.1	92.1
16.	I am able to clarify information that has been provided to me.	5.65 (0.93)	5.6	1.1	93.3
17.	Patient information is provided in a timely fashion.	5.46 (0.87)	5.6	2.2	92.1
18.	I have the opportunity to ask questions about things I do not understand.	5.67 (0.96)	4.5	3.4	92.1
19.	I find handover takes too much time.	3.39 (1.68)	67.4	4.5	28.1
20.	The information that I receive is up to date.	5.49 (1.00)	7.9	2.2	89.9
21.	I am able to keep my mind focused on the information being given to me.	5.56 (0.94)	6.7	1.1	92.1
22.	I am educated about different aspects of nursing care.	5.57 (0.88)	2.2	6.7	91.0
23.	I feel that important information is not always given to me.	4.01 (1.59)	46.1	14.6	39.3

Research Question 2:

Are there any associations between demographic variables and nurse/PCAs satisfaction?

Null hypothesis, H₀:

There is NO significant difference(s) between demographic variables and nurse/PCAs satisfaction.

(A) t-test / one-way ANOVA

Table 4.2: Respondents' Total Mean Score of Satisfaction on SBAR with Demographic Data (n = 89)

Variables	SBAR Mean Score (Satisfaction)	Mean ± SD	t	P
Gender (<i>t-test</i>)	Female	5.11 ± 0.63	-0.788	0.433
	Male	5.46 ± 0.56		
Variables	SBAR Mean Score (Satisfaction)	Mean ± SD	ANOVA (F)	P
Age (years)	21-30	5.05 ± 0.59	0.791	0.456
	31-40	5.17 ± 0.67		
	41-50	5.31 ± 0.71		
Working Experience (Years)	Less than 1 year	5.10 ± 0.37	1.847	0.127
	1-3 years	4.94 ± 0.51		
	3-5 years	5.15 ± 0.65		
	5-10 years	5.05 ± 0.76		
	More than 10 years	5.46 ± 0.57		
Years of Employment (current workplace, CAH-C)	Less than 1 year	5.27 ± 0.58	1.627	0.175
	1-3 years	4.92 ± 0.72		
	3-5 years	5.08 ± 0.63		
	5-10 years	5.25 ± 0.49		
	More than 10 years	5.46 ± 0.37		
Position	Charge Nurse @ Nursing Admin.	5.60 ± 0.37	3.707	0.015*
	Senior Staff Nurse (SSN)	5.57 ± 0.24		
	Staff Nurse (SN)	4.96 ± 0.74		
	Patient Care Assistants (PCA)	5.20 ± 0.28		
Ethnicity	Malay	5.09 ± 0.61	0.551	0.649
	Chinese	5.44 ± 0.50		
	Indian	5.08 ± 0.82		
	Bumiputra	5.20 ± 0.44		
Highest Qualification Level	Certificate	5.23 ± 0.27	1.640	0.186
	Diploma	5.04 ± 0.72		
	Degree	5.27 ± 0.42		
	Master	6.14 ± N/A		

*Statistically significant $p < 0.05$ (between group, NS within group)

This section reports the association between demographic variables and nurse/PCAs' satisfaction level with regard to using SBAR for handover. The demographics include gender, age, working experience, years of employment, position, ethnicity, and highest qualification level (Table 4.2). Additional two remaining variables examine the average duration of time spent on general documentation (individual) and time consumption per shift for handover (team) (Table 4.3).

Table 4.3: Respondents’ Total Mean Score of Satisfaction on SBAR with Average Time Spent Per Shift (Individual and Team) (n = 89)

Variables	SBAR Mean Score (Satisfaction)	Mean ± SD	ANOVA (F)	P
Average time (mins) spent per shift on general documentation	Individual (per shift for general documentation)	48.99 ± 45.13	1.898	0.048*
Average time (mins) consumption per team per shift handover	Team (per shift for handover)	38.57 ± 30.56	1.124	0.355

Referring to Table 4.3, with regard to the SBAR mean score of satisfaction; the first category of average time spent per shift on general documentation as per individual had the mean time of 48.99 minutes (± SD 45.13) (F = 1.898, p = 0.048), which is statistically significant at alpha level of 0.05. For the team handover per shift, the mean time consumption is 38.57 minutes (± 30.56) (F = 1.124, p = 0.36), however, is not statistically significant.

(B) Correlation

Four correlations are discovered with statistical significance and reported below as summarized in Table 4.4. The first correlation was found between “years of working experience” with that of “total mean score of satisfaction on HES (SBAR)”, with Pearson correlation, r = 0.211 in positive direction, and a 2-tailed significance of p = 0.047 (<0.05), which is statistically significant.

Second correlation was found between “average time (in minutes) spent per shift on general documentation” and “total mean score of satisfaction on HES (SBAR)”, with Pearson correlation, r = -0.247 in negative direction, and a 2-tailed significance of p = 0.019 (<0.05), which is statistically significant.

The next correlation was found between the individual item of HES questionnaire, Q19 “I found handover takes too much time” with that of “years of working experience”. The Pearson correlation, r = 0.263 in a positive direction, and 2-tailed significance at p = 0.013 (<0.05), which is statistically significant. Last and the fourth correlation found again between individual item of Q23 “I feel that important information is not always given to me” with that of “years of working experience”, with Pearson correlation, r = 0.241 at 2-tailed significance level of p = 0.023 (<0.05), which is statistically significant. Hence, these illustrate two items within the HES questionnaire are correlated with years of working experience. Therefore, the null hypothesis is rejected, with the findings demonstrated that there are (statistically) significance between certain demographics and nurses/PCAs satisfaction in using SBAR tool for shift handover.

Table 4.4: Summary of Correlations

Item(s)	Pearson Correlation, r	2-tailed Significance, p
‘Years of working experience’ and ‘total mean score of satisfaction’	0.211	0.047
‘Average time spent per shift on general documentation (individual)’ and ‘total mean score of satisfaction’	- 0.247	0.019
‘Years of working experience’ and Q19 ‘handover takes too much time’	0.263	0.013
‘Years of working experience’ and Q23 ‘important information not always given’	0.241	0.023

Research Question 3:

These are consolidated and collated into summary below by going through their anecdotes and excerpts (for recurring responses, with n = total respondents indicated in bracket). The findings of this study were aligned with the major themes discovered in the literature.

Key Strengths (of SBAR for Handover)	Key Suggestions for Improvement
<ul style="list-style-type: none"> • Improved communication (n = 17); • Enhanced patient safety (by error reduction) and reduced number of incident reports (sentinel event, near misses) (n = 5); • Guide and referral to patient's updates (conditions, treatment, and care) (n = 7); • Comprehensive and complete handover, with clarity and accuracy (n = 10); • Prevent important and pertinent information from missing out or overlooked with SBAR use, given relevant information (n = 7); • Shorter handover time or save time (n = 5); • Organized, systematic and easy approach (n = 8); and • Reduced likelihood of passing over unrelated or irrelevant information (n = 1). 	<ul style="list-style-type: none"> • Need more practice and exposure to increase self-confidence (training and strict practice) (n = 11); • Need monitoring or regular interval audit (compliance) (n = 3); • Give importance to patient care (summary and focus) (n = 2); • Proper documentation and assessment form required (n = 1); • To assess patient properly prior to handover (n = 1); • Teamwork and cooperation (i.e. all nurses and PCAs must work together in documentation to facilitate staff in handover report) (n = 2); and • To handover to the assigned/allocated nurse taking direct care of patients (n = 2).

DISCUSSION

The findings of this study were aligned with the major themes discovered in the literature. First research question and hypothesis was answered by discovering generally high satisfaction towards using SBAR for handover, consistent with those results of Chung et al. (2011); Edberhardt (2014); Sand-Jecklin and Sherman, (2013), in which their findings reported improvement of nursing satisfaction via means of SBAR format. The final evaluation revealed as high as 71.7% of participants reported satisfaction over SBAR use (as their message was understood and acknowledged), 52.1% respondents commented communication flow had improved, along with positive perceptions that SBAR had potential for error reduction (66.2%) and the same tool is beneficial to facilitate communication with other colleagues (70%).

Conversely, the findings of this study found that despite being relatively satisfied, there are contradictory result to that of Chung et al. (2011) and Cornell et al. (2014), which discovered that SBAR's efficiency contributing to lower nursing time consumption on handover. This was reflected in this study's findings that average time spent per team on handover was not statistically significant at mean time of 38.57 minutes (SD = 30.56). Moreover, individual item in the questionnaire also demonstrate high dissatisfaction of respondents that handover taking too much time, given irrelevant information, and important information not always received. Perhaps this can be possibly explicated by the key limitations and suggestions as reported that: "time-consuming despite having a structured SBAR tool", "if at times handover patient in too detailed approach", "need more practice and training, strict monitoring and regular audit on SBAR practice", as well as "low awareness especially among fresh nurses", to name a few anecdotes from respondents.

With regard to the correlation of longer years of experience and higher dissatisfaction over important information not always given, as indicating those experienced demand pertinent information at times not received, was found consistent with that reported by Holly and Poletick (2013). The authors asserted that inconsistency over the information handed over, despite being guided by structured tool such as SBAR. This is not surprising given the fact that not all nurses were formally trained in nursing school syllabus and current workplace, but rather on-job training (and yet not all being chosen and sent for) with self-observation to develop the skill. In agreement on handover communication as overlooked in educational curriculum, the formulation of appropriate education program at institution level or nursing school is believed to be significantly contributed to the improvement of the process (Banihashemi et al., 2015).

Yet, another correlation of seniors reporting handover being too time consuming also directs us to the findings of Bruton et al. (2016), stating that nurses at times (if not frequently) stayed back undeterred by the need of overtime in order to complete their handover, serving as ‘gatekeeper’ to safeguard the continuity of care (Holly & Poletick, 2013), therefore time-consuming due to finishing handover beyond duty time. Dean (2012) also voiced the concern that extended handover could engrave the nursing care time and standards of care patients received.

In relation to the theoretical framework of Mania Communication Model (MCM) (Manias, 2010), the open-ended comments were found associated with the MCM framework and Donabedian’s model of best practice in terms of ‘structure, process, and outcome’. The main findings from this study can be attributable to both time constraint and enabling effect of using SBAR in handover. The ‘structure’ of handover and SBAR as a guide for all level of nurses in each respective unit facilitate their working culture, in congruent of that from Kear et al. (2016).

DIRECTIONS FOR FUTURE RESEARCH

The findings revealed an overall satisfactory level of satisfaction from nurses in the use of SBAR for handover. In addition, associations were identified with regard to position, average of individual time spent on general documentation, and numbers of correlation in terms of years of working experience and individual items of HES questionnaire. Open-ended questions also generated valuable feedbacks for all stakeholders to improve current handover practice using SBAR. Discussion was done around the congruent and contradictory findings with previous evidence and contemporary literature. Undeniably, there are some limitations inherent from this study, and directions for future research are recommended.

CONCLUSION

The findings revealed an overall satisfactory level of satisfaction from nurses in the use of SBAR for handover. In addition, associations were identified with regard to position, average of individual time spent on general documentation, and numbers of correlation in terms of years of working experience and individual items of HES questionnaire. Open-ended questions also generated valuable feedbacks for all stakeholders to improve current handover practice using SBAR. Discussion was done around the congruent and contradictory findings with previous evidence and contemporary literature. Undeniably, there are some limitations inherent from this study, and directions for future research are recommended.

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LEARNERS' PERCEPTION OF OUM VIDEO LECTURES

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ABSTRACT

Leveraging on information and communication technology (ICT) has enabled education providers to come up with creative ways of engaging with learners. As a result, learners are constantly being exposed to new ways of learning and collaborating with their peers. Also, accessibility to affordable smart devices with fast connections has only intensified the integration of technology into the education sphere. Open University Malaysia (OUM) has long recognised this trend and has been actively developing various tools to deliver its learning materials through the online model. One such tool is its online video lectures. This paper describes an exploratory study of OUM learners' perception of video lectures for certain courses in their studies. The study is based on a survey questionnaire to determine learners' expectations and preferences for the video lectures used in OUM and also on what other additional features, if any, should be included. The motivation of this research is to help the institution make an informed decision on the future development of video lectures based on the feedback of learners so that they are aligned with the expectations of OUM learners.

Keywords: *Online Video Lecture, Technology-Assisted Learning, Open and Distance Learning*

INTRODUCTION

The last two decades have witnessed an upheaval in online education. This upheaval has been largely driven by technological and pedagogical trends, greater access to the Internet globally, an explosion of mobile phone users, and the appreciation for these technologies by young people, as well as by educators. (Siemens, Gašević, & Dawson, 2015). It is arguable that today's adult learner who is technologically more savvy than his/her predecessor two decades ago demand a variety of learning resources besides the print module, long considered the staple among ODL providers. Some of these resources include, audio clips, TV and radio broadcasts, computer-assisted learning and open educational resources (OER).

As a result, ODL providers are evolving to remain relevant by embracing technology to meet the expectations of its learners. Thus, the infusion of technology in the development of ODL learning resources is the mantra. Moreover, leveraging on technology has also allowed ODL providers to come up with a repertoire of learning resources to better accommodate the diverse needs of its learners. This is a blessing for the adult learner; research has shown that they allow for flexible and active learning, where learners can learn curriculum content at their own convenience and preferred pace (Cardall, Krupat & Ulrich, 2008; Maxwell & Mucklow, 2012; Zhang, Zhou, Briggs & Nunamaker, 2006). Besides, by catering to the different needs ensures that no learner will be left behind due to his or her preferred pace for learning.

This phenomenon is not lost on the policy makers at OUM. To date, OUM has already developed 293 video lectures spanning various academic disciplines from nursing to business and management to social science to education and languages to science and technology. These video lectures were produced by Subject Matter Experts working in tandem with the Centre for Instructional Design and Technology (CiDT). Besides video lectures, OUM had also created other learning resources like the HTML module, learning segments, learning capsules and audio books. Currently, the video lectures play a supplementary role to the PDF modules, the backbone of its learning resource, which drives the pedagogy at the university. Also, at present there is an e-learning initiative in the pipeline to offer certain programmes on a fully online mode, where video lectures may have a more prominent role to play.

Thus, the main objective of this exploratory study was to gather learners' perception on video lectures that have been developed in OUM. Towards this end, we were particularly interested in gathering information in the following five areas: learners preferred device in viewing video lectures, how often learners viewed them and at what point in the semester, why they watched them and what additional features learners wanted to see more of in future video lectures. We also sought to elicit their suggestions and feedback on what additional features could be included for future video lecture development. It is hoped that the findings of this exploratory research will help the institution make an informed decision on the future development of video lectures so that they are aligned with the expectations of OUM learners.

LITERATURE REVIEW

One learning resource that has grown, exponentially, in popularity and already exists on many different platforms is the video lecture. It is intriguing to note how video usage predominates the Internet bandwidth in daily life. According to Cisco, "Globally, the total Internet video traffic (business and consumer, combined) will be 77% of all Internet traffic in 2019, up from 59% in 2014" (CISCO, 2017). While it took six minutes to download a YouTube video in 2005, it only takes a fraction of that time to stream it on our smart devices today! If these statistics are anything to go by, then video lectures appear very well placed to be a major game changer in enriching the quality of the learning experience in ODL.

Moss (1983) contends that video is different from other learning technologies, because it offers the benefit of using the visual perception, "that powerful but neglected sense" in new ways. On the other hand, Goodyear and Steeples (1998) argue that video can present in a clear and striking manner descriptions to articulate tacit information and knowledge hard to describe through text. Moreover, videos have gained considerable traction among education providers not only as supplemental material to the staple face-to-face instruction offered but also as a vital component of online courses and they are considered as a powerful communication and instructional tool (Moridani, 2007; Nikzad, Azari, Mahgoli & Akhoundi, 2012; Ramlogan, Raman, & Sweet, 2014). A recent study has also concluded that learners' satisfaction with video lectures has a strong correlation with positive overall learning experience and the perception of impact of videos on learning (Scagnoli et al., 2017).

Thanks to better and faster Internet connectivity, video lectures can be accessed more easily, faster and across multiple platforms and devices. It can also be viewed anytime and anywhere; and stopped and replayed as many times as needed. Within higher education, the increasing prevalence of technology is driving the viability and availability of online teaching and the open academic resources, and video is playing a role in facilitating these developments (Bates, 2015; Greenberg & Zanetis, 2012).

METHODOLOGY AND DATA COLLECTION

For this exploratory study, a mixed method approach was used to collect data through an online questionnaire. The self-administered questionnaire was designed using Google Docs and uploaded onto OUM’s learning platform known as myINSPIRE. Our reason for using Google Docs was for its built-in tools that allows for the easy organisation and conversion of data to graphs that makes the analysis of data that much easier. These questions were either multiple choice (encompassing the 5 areas of interest mentioned earlier) or open ended questions (to elicit feedback and suggestions for future video lecture development). The respondents were learners from OUM learning centres throughout the country. The questionnaire was uploaded into myINSPIRE on 8 January and collected on 23 January 2019. A total of 77 respondents completed and submitted the questionnaire for this study. The respondents were from various programmes and clusters and they were requested to fill up the online questionnaire during their leisure.

The results from the questionnaire are discussed in the next section.

FINDINGS AND DISCUSSION

1. How do you access our video lectures?

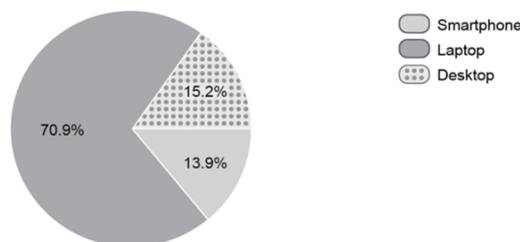


Figure 1: Responses to the Question “How Do You Access Our Video Lectures?”

The data in Figure 1 suggest that the overwhelming majority of the respondents (70.9%) prefer to access their video lectures on their laptops. After all, laptops are ubiquitous today in Malaysia among learners for the technological tools that they offer combined with their portability. So, it should not come as a surprise that most of the respondents access video lectures on their laptops. On the other hand, the remaining respondents were nearly split in their choice of watching the video lectures on their desktop or smartphones. The low preference in watching video lectures on smartphones is worth noting. There can be a couple of reasons for this: the respondents are unaware that video lectures can just as easily be downloaded and accessed through their smartphones, or secondly they do not consider this device as a “learning” tool. Or perhaps the limited screen size of the smartphones makes them an unattractive proposition for viewing video lectures. It appears that the “visual aesthetics” of video lectures combined with audio can best be enjoyed on a larger screen. Hence, the popularity of the laptop as the device for watching video lectures among the respondents.

2. How often do you watch our video lectures per semester?

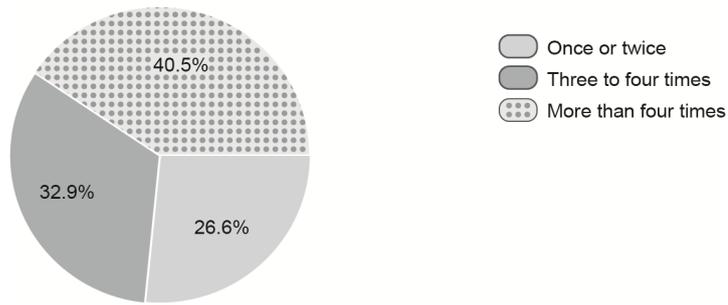


Figure 2: Responses to the Question “How Often Do You Watch the Video Lectures Per Semester?”

Based on Figure 2, a majority of the respondents have watched video lectures more than four times at 40.5%, while almost a third of the respondents have viewed the video lectures 3 to 4 times per semester. On the other hand, about 27% viewed them only once or twice per semester. This indicates that the video lectures have a high viewing frequency with almost 75% of the respondents viewing the videos at least three times per semester.

3. At what point did you start watching the video lectures?

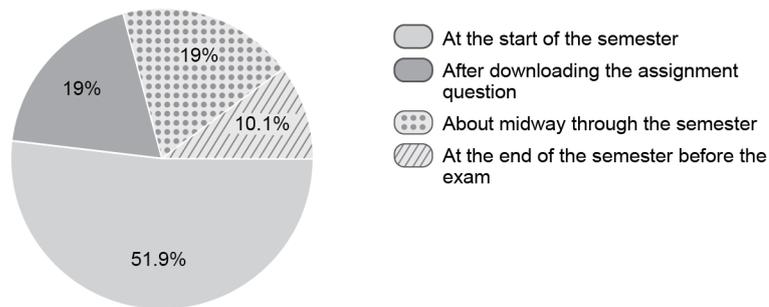


Figure3: Responses to the Question “At What Point Did You Start Watching the Video Lectures?”

Figure 3 indicates that about 52% of the respondents viewed video lectures at the start of the semester. This means that most learners are aware of the availability of this supplementary learning tool at the point of registering for the semester and are eager to refer to it, probably to get an overview of the course content that they have enrolled for before attending the F2F tutorial. Meanwhile a smaller percentage of learners at 19% watched the video lectures either after downloading the assignment question or midway through the semester. Only 10% viewed the videos at the end of the semester, prior to taking their exams.

4. Which best describes why you watch the video lectures?

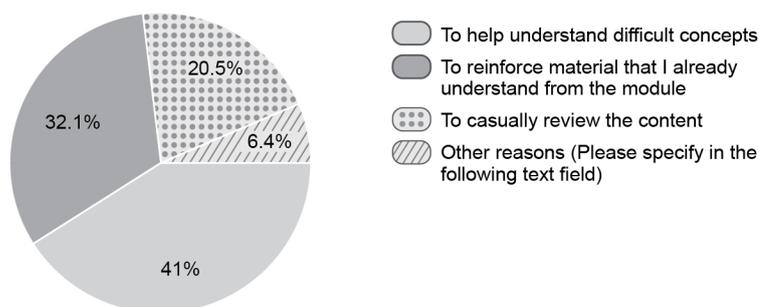


Figure4: Responses to the Question “Which Best Describes Why You Watch the Video Lectures?”

Figure 4 suggests that 41% of the respondents watched the video lectures to help understand difficult concepts. This could indicate that video lectures may be helping respondents in the understanding of difficult concepts by providing them with better concept clarity, as these can be more efficiently visualised and explained in detail as opposed to reading the module. For example, in a video lecture it is very common to present concepts in a video lecture with the presenter simultaneously expounding therein. On the other hand, 32% of the respondents used the video lectures to reinforce material that they already understood from the module.

In other words, the video lectures appear to be having some impact in supplementing the e-module by helping elucidate difficult concepts and reinforcing understanding of the content in the module. By contrast, close to 21% considers it as a way to casually review the content.

About 6% of the respondents gave other reasons such as to help highlight assignment key points, preview a topic before reading it in detail, gain a basic idea of the topic before reading the module; and the retention of facts.

5. What features would you like to see more of in the video lectures in the future? Additional features in the video lectures:

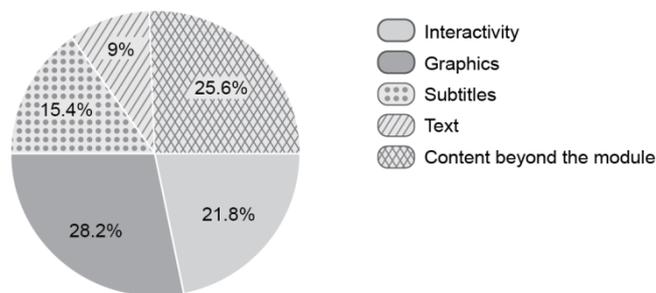


Figure 5: Responses to the Question “What Features Would You Like to See More of in the Video Lectures in the Future?”

The top three features which the respondents want to see more of in video lectures (as shown in Figure 5) are graphics, interactivity and content beyond module. These are basically the main features which can enhance the videos further and make them more interesting as a learning supplement to the pdf module. Interactivity maybe a useful feature that can be added to future video lectures. With regard to the content in the video lecture going beyond the module, this may require further discussion among the academics in the cluster and CiDT.

6. Suggestions to improve future video lectures.

The respondents had also provided feedback and suggestions for further improvement which can be broadly categorised into two areas, namely on the presenters’ style of delivering video lectures and additional features to be included in future video lectures.

From the aspect of delivery of video lectures, some respondents suggested the need for presenters to improve their presentation skills and the comments are as follows:

- “Lecturers need to be trained as professional speakers in order to conduct lectures lively and interesting.”
- “Some video lecturers tend to repeat whatever is on the screen.”
- “Keep the video lectures interesting by improving the way how it is delivered, sometimes, they’re too rigid.”

Respondents also feel that presenters should avoid dialects and provide more explanation of the content as reflected in the following comments:

- *“Some of video, the lecturer is using “kampung English”. Sound like some “state language” which make me confusing (sic).”*
- *“Video lecture should be more elaborated than the current one.”*
- *“I hope the lecturers could give more explanations in their own words instead of just reading out the learning outcomes from the modules. It would be nice for the students to feel like attending lectures face to face. The lecturers could bring out some of the common problems that the students may have to deal with in our course of study”.*

Moreover, in terms of additional features, a few of the respondents would like to see mind-maps, Malay subtitles and transcripts, and interactivity included in future video lectures, as shown in the following comments:

- *“Use more graphics.”*
- *“Subtitles or transcripts of the video would be useful for us”*
- *“Use a lot of graphic and mind mapping.”*
- *“Create an interactive and creative lecture”*

CONCLUSION AND IMPLICATIONS

The research findings from this exploratory study have provided some useful preliminary insights on OUM learners’ perception towards video lectures. It can be concluded from this study that the majority of the respondents accessed video lectures through laptops, viewed video lectures at the beginning of the semester and watched video lectures primarily to understand difficult topics. Also, the respondents would like to see more graphics included in future video lectures.

One implication of this study is that all video lectures should be uploaded before the start of the semester to give learners a chance of viewing them upon registering for the semester. Another would be to consider developing video lectures for certain courses that focus solely on the more difficult areas in the module. Interactive features should be added to enhance video lectures and these could include learning aids like mind-maps and sub-titles. In order to improve presenters’ skills to capture learners’ attention, tips on effective presentation skills could be included in future video lecture workshops.

The feedback provided in this survey will be seriously considered in the development of future video lectures so that they are aligned with the expectations of OUM learners, further enriching the learning experience.

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LEARNING KITS AS ONLINE LEARNING GUIDELINES IN MASTER OF EARLY CHILDHOOD EDUCATION PROGRAMME

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ABSTRACT

The master degree programme in early childhood education is a postgraduate degree programme in Open University Malaysia (OUM) designed for adult students wishing to further their studies in early childhood online. The learning kit was organised to become a guide and companion to students learning adventure in this programme. Thus this paper discusses the use of learning kit as online learning guideline for students enrolled in the Master of Early Childhood Education (MECHE) programme in OUM. This paper will also describe how learning kit can be used to assist online students in their studies for one semester. In this study, a total of 20 students from MECHE programme were selected purposively. Quantitative data was taken from questionnaires and qualitative data was taken through interviews and open ended questions. The data was analysed using the thematic analysis. The result showed that the students found the learning kit easily accessible and helpful in guiding them to study in this course.

Keywords: *Online Learning Materials, Guideline, Early Childhood Education*

INTRODUCTION

There is a growing demand for access to higher education all over the world in this era, even in Malaysia. The government has reconstructed the higher education so that it can stay relevant and meet the competition of global market. In 2017, 1.325 million students registered for higher education, this does not include those returning back to colleges and universities for additional education and training (The Council of Industry and Higher Education, 2002). Lifelong learning is now a culture of the 21st century and this has brought in rapid development in three different areas which are access to education, lifelong learning and e learning. Technologies have changed how education are delivered on campus and at a distance. Learning are now becoming more flexible and accessible which would require a specially designed course material that needs to satisfy a large range of demands for learning, not to mention a big investment needed to create a variety of digital course materials (Little John & Shum, 2003). OUM, which was established in year 2001 to provide working adults with flexible learning opportunities, was also facing similar issues.

OUM practises the blended mode where learners are given self-learning materials, three to four times face to face classes, asynchronous and synchronous online chat and forums. Formerly all undergraduate learners in OUM were equipped with printed modules that were specially designed by subject matter experts in the field. Postgraduates learners on the other hand were given text books as references. Recently in its attempt to compete globally, attract new learners and reduce learners' attrition, Open University Malaysia introduced the html modules instead of the printed ones (Woo, 2011). She further explains that in conventional universities it is the academician who strives to enhance the university's

image through research and publications however in Open Distance Learning (ODL) institutions such as OUM, it is the ability to produce good teaching and learning materials that are able to cater to diverse learning styles seems to be the main factor in enhancing the university's image. In an ODL environment the learners leverage on technology. Since learners in OUM are mainly working they are constantly on the move hence they need to be able to log in to their class anywhere and at any time. Mobile learning seems to be the university new direction. Physical books should no longer be the thing of the future, the university is looking at means of placing everything online even for the postgraduate programmes. E books, online journals and html modules seem to be the new approach the university is looking at for all post graduate programmes. When Open University Malaysia (OUM) decided to open its doors to students for the Master of Early Childhood Education (MECHE) programme, a decision was made by the faculty to innovate and do away with modules and reference books to save the university thousands of ringgits. As such, this research will study the usefulness of using learning kits as learning guidelines for MECHE programme.

PROBLEM STATEMENT

The Faculty of Education and Languages, OUM was looking for learning materials for the programme of Master of Early Childhood Programme. Early Childhood Education reference books that were in the market were either too expensive or could not fully satisfy all course content. This problem is not only experienced in OUM as according to (Stern, 2017) many universities were dissatisfied with textbooks as it is rather difficult to get a book that is suitable to a particular course in its content, presentation, prescribed nature of learning element and yet be at a reasonable price. Some universities even created course packets composed of selected materials from various books while others simply create their own materials as supplements or to replace assigned textbooks. Commercial online textbooks on the other hand have other issues such as complicated log in and configuration requirements which requires instructor's validation or not designed for organization subsidization (Stern, 2017). As such the early childhood education team in Open University Malaysia was then entrusted by the faculty to produce learning kits to replace physical books or modules, the reason being high cost of reference books, difficulty in acquiring books that satisfy all course content and lastly postgraduate's learners should be equipped with the most current learning materials as such a learning kit would be the best solution.

This objective of this research is to study the effectiveness of the learning kit as an online learning guideline to the Master of Early Childhood Education students in Open University Malaysia.

LITERATURE REVIEW

The Learning Kit as an Effective Tool

The overall aim of this study is to enhance the learning experiences particularly for MECHE students through a comprehensive guideline refer to as the learning kit. The learning kit forms the basis of the MECHE programme. It guides learners in their study. The kit has become important sources of information in academic and has become the main ingredient that have become a necessity in the MECHE programme.

According to (Woo, 2011) in an ODL institution like OUM it is the quality of learning materials that actually provide learners with a meaningful and fulfilling learning experience as instructors are not physically near to fulfil each learners learning style. Guri Rosenblit (2009) explains attribution rate for distance education is high unless the university is able to provide an intensive support system. Although ODL practices flexibility it should be mainly for entry requirement, accumulation of credit, entry and re-entry, discipline focus or interdisciplinary curriculum and not on the requirement of the programme.

Guri Rosenblit (2009) further explains once learners are enrolled they should be subjected to stringent requirements of the programme and efforts should be made to ensure that there is uniformity and sameness in instructions, resources and assessment within and across centres. This was vital as MECHE is offered in all OUM learning centre across Malaysia. Hence it is important that learners understand what their learning outcomes are and what is actually expected of them. Since the focus is on learning outcomes then the instructional materials provided should take into account different student's learning abilities and learning styles. With that in mind the design of the learning kit was based on the Constructivist approach. According to Tactle and Cutielta (2002) the cognitive theory focuses on the learning process as new information is integrated with prior knowledge. As such the learning kit was designed to firstly spark previous knowledge then extend the knowledge with new information. Discussion are also inserted for scaffolding to occur and to make it relevant to the student classroom experience. Some previous successes with learning kits were the ones used in teaching ethical practices in counselor education (Granum, 1972) and content literacy skills in increasing teacher's interest in reading (Dugan, 2007).

MECHE being an outcome based programme the learning kit was specially designed to give learners a clear understanding of the course and what is expected of them. This was made possible with the following headings clearly explained in the kit:

1. Introduction to The Course
2. Course Learnings Outcomes and Course Learning Objectives
3. Contents Outline – Topic 1 to 10
4. Topic taught in 4 seminars
5. Specific Learning objectives and learning outcomes
6. Course assessment
7. Discussion
8. Group task
9. List of references

This gave the student a clear overview of the course and what is expected of them. This also allows the student the prerogative to study in accordance to their time. (Ng & Yang, 2017) in their study on perception of academics and learners on blended learning emphasised the importance of giving clear understanding of pedagogical goals as it would increase the quality of learning when technology is being used in learning. Even learning outcome was spelled out clearly for learners in every topic in the learning kit as this will help them assess themselves if they have achieved their learning outcomes once they have finished learning a particular topic.

As a post graduate programme it is also important that the faculty keep in mind the importance of not only producing autonomous learners but also learners who are able to collaborate and discuss intellectually. Most ODL institution focuses on producing self-directed and autonomous learners which actually contradicts how e learning should be implemented (Garrison, 1997; Garrison & Anderson, 2003). Moving towards the 21century collaborative constructive approach should also be our main focus. This is important especially when learners are from diverse working background. The shared experience would definitely produce quality and knowledgeable graduates. As such the learning kit was designed not only as a tool to guide on what learners should learn and understand but it also contains prerequisite reading and questions for group discussion either online or in the F2F classes. This actually encourage the learners to do collaborative learning not only in the classroom but also online and when they convene to do group studies for those staying in close proximity.

There should be a high structured relation between the designer, tutor and student as this would make the material flexible and focused on personal needs of the student. If the learning materials are over structured, then it promotes passive learning and not active learning as what it should be.

The Use of myINSPIRE to Support the Learning Kit

myINSPIRE is a learning platform that OUM learners used to access their learning materials, assessment, time table and other related services. A lot of thought was done on how to maximise the usage of the learning kit in myINSPIRE. The learning kit was placed as a whole document as a general guide and separated according to seminar for easy reference. For each seminar the learning kit was arranged according to topics to be covered in each seminar with a folder filled with resources such as PowerPoint, notes, videos, latest journals and research that learners would need to read and watch. This made the course very organised and structured for the learners to explore and study according to their time and leisure. The ECE team took pain in choosing a variety of mode of instruction to cater for different learning styles. This also made it easy for academicians to add and remove materials at every semester to keep reading current.

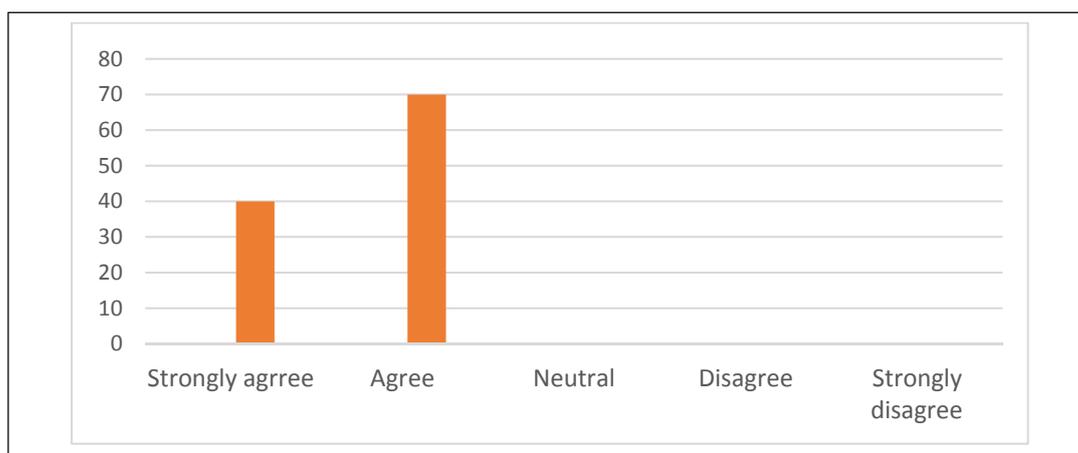
RESEARCH METHODOLOGY

This study uses quantitative and qualitative approach to collect data from MECHE students. A total of 20 students from MECHE programme from all over Malaysia were selected purposively. Quantitative data was taken through questionnaire and analysed using descriptive analysis. Whereas, qualitative data was taken through semi structured interview and open ended questions and was analysed using codes and the thematic analysis.

FINDINGS

The Table 1 below shows the percentage of respondents who selected strongly agree and agree the learning kit is relevant to the course.

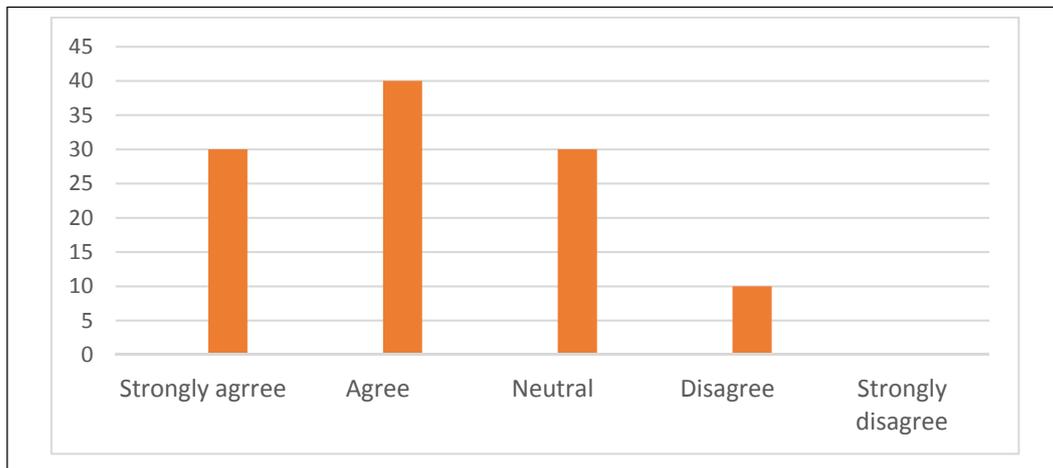
Table 1: Relevant to the Course



Analysis of the results shows that 40 percent of the respondents selected strongly agreed and 70 percent selected agreed that the learning kit is relevant to the topics in the course. None of the respondent selected neutral, disagree and strongly disagree.

The Table 2 below shows the percentage of respondents who selected strongly agree, agree, neutral and disagree that the learning kit is organized and easy to use.

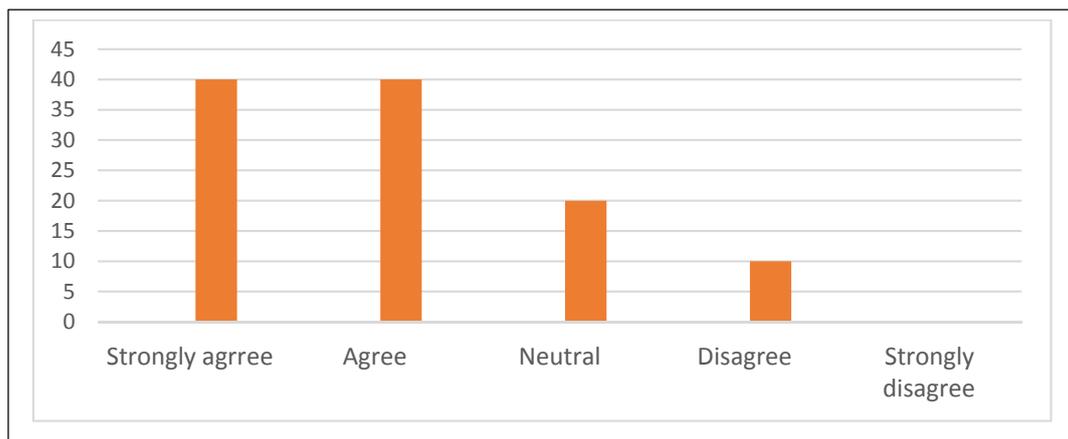
Table 2: Organize and Easy to Use



Analysis of the results shows that 30 percent of the respondents selected strongly agreed, 40 percent selected agreed. A total of 30 percent selected neutral and 10 percent selected disagree. None of the respondent selected strongly disagree that the learning kit is organized and easy to use.

The Table 3 below shows the percentage of respondents who selected strongly agree, agree, neutral and disagree that the learning kit should be continued.

Table 3: The Learning Kit Should be Continued



Analysis of the results shows that 40 percent of the respondents selected strongly agreed, 40 percent selected agreed. 20 percent selected neutral and 10 percent selected disagree that the learning kit should be continued. None of the respondent selected strongly disagree that the learning kit should be continued.

Thematic analysis was employed to identify specific themes related to the learning kit. Basically three themes emerged from qualitative data analysis collected through open ended questions and interview.

Theme 1: The Learning Kit is an Important Tool to Support Students' Learning

There was an agreement among respondents that the learning kit is important to support students learning. They felt that the learning kit is an important tool to support students' learning throughout the course of the programme. They agreed that the learning kit do guide them on their leaning as well as provide all necessary list of learning materials related to their study.

The following are some response from the respondents:

Respondents 1:

"Learning kit is very important especially for a person to do learning on own initiative."

Respondent 2:

"It guide me on what to study."

Theme 2: The Contents of the Learning Kit is Very Informative

Majority of the respondents agreed that the learning kit is simple and it give broad views of what to expect in the course. They agreed that the kit gives whole picture of the course by providing students with learning target and goals. There was an agreement among students that the learning kit describe learning outcomes that learners have to achieve by the end of the course. They found that the list of references in the learning kit is very useful.

The following are some response from the respondents:

Respondent 1:

"I first get the whole idea of the course after seeing the learning kit. Then I start to plan my study based on the learning kit. Firstly, I will download or search all the materials given in the learning kit and arrange nicely in folder accordingly."

Respondent 2:

"All the materials given in the learning kit and arrange nicely in folder accordingly."

Respondent 3:

"I think one of the key things I find useful was the references part where you list down what books to refer to, what journals to refer to, what articles to refer to"

Theme 3: The Learning Kit Provide Self-directed Learning for Distance Learning Students

Finally, majority of the respondents mentioned that the learning kits provide self-directed learning for distance learning students to plan at their own time to complete the course. One of the respondents mentioned that the discussion questions in the learning kits are very helpful in preparing them for the examination.

The following are some response from the respondents:

Respondent 1:

"I like the discussion questions in the learning kit. I will try to find answers for each of the questions. Indirectly, I don't only learn from the discussion questions but also help me in preparing for the exam."

Respondent 2:

"I first get the whole idea of the course after seeing the learning kit. Then I start to plan my study based on the learning kit."

The following section reported some of the weakness in the learning kits.

1. Some of the list of references are not updated and available online
2. Some suggested link is not being discussed in class or used in the assignment
3. Some notes are not organized therefore create confusion
4. Only part of the course contents covered in the video lecture

In addition, here are few suggestions from respondents in this study for improving the learning kits.

1. More relevant and precise guide with useful information to the students
2. Include more information regarding assignment and rubric

DISCUSSION

From the findings of the study, it would appear that the respondents in this study endorse the importance of learning kit as a guideline for their study. Majority of MECHE students agreed that the learning kit is relevant to the course and easy to use. Based on the finding, 70 percent has agreed that the learning kit is relevant to the course. They agreed that the learning kit has supported their learning throughout the course of the programme. However, the results of this study also revealed some weakness in the learning kits. Some references are not updated and not all journals listed are still assessable online or has password. Thus it is important for academicians to ensure all list of references are updated and all books are available in the library.

CONCLUSION

The provision of learning kit as part of MECHE online guideline has provided unexpected support to learners learning in MECHE programme. Learning kit has become a main guideline for MECHE learners in terms of access to current and updated information for their academic endeavours. For this reason, it is important for the university to prioritize learning kit as an important tool for all post graduate learners to ensure learners will be provided with a comprehensive guideline and would be able to see a general overview of the course and are aware of learning outcomes that they have to achieve. A greater awareness of learning expectation provides a more meaningful learning experience and to better address the unique needs of postgraduate learners. Postgraduate learners come from a variety of career backgrounds. They place a great deal of importance on their educational experience, especially in regard to academic factors. This is likely to enhance lifelong learning and support retention and progression rate.

Clearly, the results of this study may provide useful information for postgraduate lecturers and course developers in shedding some light on how to make ODL learners more convenience in unfamiliar and complex ODL environments. There are potential benefits for higher education institutions to identify, understand and act upon, the particular requirements of postgraduate learners. Postgraduate courses must be specifically tailored to ensure learners are provided with relevant support, information, knowledge and skills from their educational experience to ensure career progression. Branch (2009) stated that instruction is appropriate only when the competency of the individual can be increased through improved knowledge or skills. In order to alleviate these challenges, maximum use of resources and guidelines should be put in place to make sure they are fully utilized and accessible by learners. Thus, further research to explore the specific needs of mature ODL postgraduate learners would provide greater insight into the needs of the programme and course contents.

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PERCEPTION ON LEARNING THROUGH E-INCUBATOR AMONG NURSING STUDENTS

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ABSTRACT

E-learning has become very popular in higher education institutions. It is obvious that the majority of higher educational institutions today tend to use various educational technologies and among them one of the most popular methods is E-learning. E-incubator is a platform which is developed to uplift healthcare education through innovation in digital health. The main purpose of using the E-incubator is to ease the learning strategies of nursing students and to improve the continuous professional development of nursing profession. Though this E-learning platform is a modern concept for Nursing Training Schools prevailing in Sri Lankan context where the delivery of lectures was 100% face-to-face and assessment methods were totally based on manual documentation system. It is thus imperative that nursing educators research on the perception of students towards E-learning in order to study the effectiveness of such offerings. This Study was conducted as a descriptive, cross-sectional study using 150 third-year nursing students selected using a stratified random sampling technique with the purpose of assessing the perception on learning through E-incubator among nursing students. Majority of the participants were female (82%) and majority of the participants (86.6%) of the sample has the access to digital devices and internet. In conclusion it can be stated that the majority (86.6%) preferred to learn from E-learning platform than the prevailing traditional learning methods. 60% of the sample has only used E-incubator in their final year due to unawareness of this modern web based learning environment. 88% of the sample has learned that usage of E-platform is more beneficial rather than the prevailing traditional learning methods in Sri Lankan context. The results of the study emphasise that the students' perception towards E-incubator has imprinted a positive impression within them. When compared with the developed countries, E-incubator is an innovative concept for Sri Lankan nursing students who used to learn through traditional learning strategies. This study highlighted that the Students' positive perception towards learning through web based environment "E-incubator" is more appropriate and it is an indispensable requirement for the current system of nursing education.

Keywords: *E-incubator, E-learning, Perception*

INTRODUCTION

E-learning has been introduced as a tool in the learning process in the majority of the international universities worldwide. The term “e-learning” is defined by Fee, K.H (2005) as “any learning that involves using internet or intranet.” A year later Cheng, K (2006) made the definition more generalised by indicating that it is “anything delivered, enabled, or mediated by electronic technology for explicit purpose of learning”. According to Li, H & Masters, J (2009) “e” in e-learning should not stand for electronic; it should be an abbreviation for “evolving, enhanced, everywhere, every time and everybody.” In fact, the quotation of Li, H & Masters, J (2009) shows most of the advantages of e-learning for learners and instructors.

Web-based learning is used nowadays as another option to face to face education. As a matter of fact, its use increases in a direct proportion with the increase in the number of students. This has made educators exert a lot of effort to help the learners to get interactive content that is full of multimedia as it has been proven to have a significant effect on the process of learning. The impact of blogs and wikis has also been investigated on learners' collaboration and reflection and it was reported that they both have a positive effect.

Information and Communication Technology (ICT) plays an important role in every sector and it progressively more widely spread throughout the education sector with a high demand. Consequently, e-learning has emerged as a very important tool to assist and facilitate the teaching and learning process as today's learners want relevant, mobile, self- paced and personalised content .Therefore their necessity is fulfilled with this modern concept “online mode of learning”. Further it provides the tools for learners to be in contact with peers and teachers inside and outside the classroom. Besides, it also empowers the learners to manage their own learning with the help of the most appropriate way for each learner.

Hall (2001) stated that e-learning is the fastest growing and most promising in the educational industry. Information and Communication Technology can empower teachers and learners, making significant contribution to learning outcomes and achievement. Students no longer need to spend long periods travelling to a location to attend a course; they can now have access to learning when they want it, at the time they want it – day or night, wherever they want it – at home, at work, in their local library. The learning no longer needs to be a passive experience, with the learners all sitting in front of the lecturer and “learning by face to face interaction and through manual documentation system for assessments”. The e-learning makes learning an active and interesting experience for students which motivates them to search for new knowledge utilising modern online learning tools as they accommodates everyone's needs whenever necessary and through this digital revolution the content can be accessed , consumed, discussed and shared according to learner's preference.

The e-learning is no longer simply associated with distance or remote learning but forms part of a conscious choice of the best and most appropriate ways of promoting effective learning. Ryan, (2001) observed that e-learning can be implemented in a variety of ways, such as through the use of self-paced independent study units, asynchronous interactive sessions (where participants interact at different times) or synchronous interactive settings (where learners meet in real time). Participants in this educational and training paradigm require rich learning environment supported by well-designed resources (Khan, 1997). Some part of e-resources nowadays are involved in all types of learning. Although e-learning and various blended approaches that integrate online components into traditional classes continues to grow rapidly, it still remains at an early stage of development. Consequently, developers and deliverers of online learning need more understanding of how students perceive and react to elements of e-learning (since student perception and attitude is critical to motivation and learning) along with how to apply these approaches most effectively to enhance learning (Koohang & Durante, 2003).

In Sri Lanka, pre-registration nursing education is currently based on a three-year diploma level nursing programme in schools of nursing that are attached to the Ministry of Health and four-year bachelor programmes in nursing at universities. The government policy is that nursing education should be based on the four-year undergraduate nursing programme (Jayasekara, 2009). In response, the University Grant Commission of Sri Lanka (UGC) has approved the four-year Bachelor of Science in Nursing programmes (BScN) in government universities. In addition to the proposed affiliation of existing schools of nursing to the university sector, several other universities including the Open University of Sri Lanka proposed to establish similar programmes in the future.

E-learning has become very popular in higher education institutions. Various higher educational institutions tend to deliver courses using this popular method “E-learning”. E-incubator is a platform developed for improving healthcare education through innovation in digital health. Implementation of the E-incubator today is to ease the learning strategies of nursing students and they can learn at their own comfort and requirement in order to promote the continuous professional development of nursing profession. Basically this E-learning platform is introduced for Nursing Training Schools of Sri Lanka as the delivery of lectures was 100% face-to-face and assessment methods were totally based on manual documentation system.

This modern concept can be identified as a more beneficial mode for learners to become competent and prospective as this online learning accommodates everyone’s needs, lectures can be taken any number of times, offers access to updated content, quick delivery of lessons, scalability, consistency, a cost effective method, high effectiveness and less impact on environment. Furthermore it can be discussed as follows about the benefits of E-Learning concept.

1. **Online Learning Accommodates Everyone’s Needs**
The online method of learning is best suited for everyone. This digital revolution has led to remarkable changes in how the content is accessed, consumed, discussed, and shared. Online educational courses can be taken up by learners at the time that suits them. Depending on their availability and comfort.
2. **Lectures Can Be Taken Any Number Of Times**
Unlike classroom teaching, with online learning you can access the content an unlimited number of times. This is especially required at the time of revision when preparing for an exam. In traditional form of learning, if you are unable to attend the lecture, then you have to prepare for that topic on your own; in eLearning, you can attend the lectures whenever you want with ease.
3. **Offers Access to Updated Content**
A prime benefit of learning online is that it makes sure that you are in synchronization with modern learners. This enables the learner to access updated content whenever they want it.
4. **Quick Delivery of Lessons**
E-Learning is a way to provide quick delivery of lessons. As compared to traditional classroom teaching methods, this mode has relatively quick delivery cycles. This indicates that the time required to learn is reduced to 25%-60% of what is required in traditional learning. Therefore it is very much useful as idleness of learners is reduced by eLearning:
 - (a) Lessons starts quickly and also wrapped up in a single learning session. This enables training programs to easily roll out within a few weeks, or sometime even days.
 - (b) Learners can define their own speed of learning instead of following the speed of the whole group.
 - (c) Saves time as a student does not need to travel to the training venue. You can learn at the comfort of your own place. Students can choose to study specific and relevant areas of the learning material without focusing on each and every area. For example, they can skip certain areas they do not want to learn.

5. **Scalability**
E-Learning helps in creating and communicating new training, policies, concepts, and ideas. Whether it is for formal education or entertainment, eLearning is very quick way of learning,
6. **Consistency**
E-Learning enables educators to get a higher degree of coverage to communicate the message in a consistent way for their target audience. This ensures that all learners receive the same type of training with this learning mode.
7. **Reduced Costs**
E-Learning is cost effective as compared to traditional forms of learning. The reason for this price reduction is because learning through this mode happens quickly and easily. A lot of training time is reduced with respect to trainers, travel, course materials, and accommodation.

This cost effectiveness also helps in enhancing the profitability of an organization as well. Moreover when you are studying at your own place, you are relieved from paying for travel expenses (e.g. accommodation) when training happens in another city/state and/or external learning materials.
8. **Effectiveness**
E-Learning has a positive influence on an organization's profitability. It makes it easy to grasp the content and digest it. It also results in improved scores on certifications, tests, or other types of evaluation. Higher number of students who achieve 'pass' or mastery' level and it also enhance the ability to learn and implement the new processes or knowledge for the betterment of learners and help in retaining information for a longer time.
9. **Less Impact on Environment**
As E-Learning is a paperless way of learning, it protects the environment to a lot of extent. As per a study done on eLearning courses, it has been found that distance-based learning programs consumed around 90% less power and generated 85% less amount of CO2 emissions as compared to traditional campus-based educational courses. With eLearning, there is no need to cut trees for obtaining papers. Thus, eLearning is a highly eco-friendly way of learning.

Therefore due to above mentioned wide set benefits E-Learning has become more popular and appreciated among students all over the world today.

LITERATURE REVIEW

Several systematic reviews and meta-studies on the effectiveness of e-Learning are considered within the context of health care or language learning. These reviews primarily include quantitative studies based on certain criteria, such as sample size (Veneri, 2011), transparency of statistical information (Grgurovic, Chapelle and Shelley, 2013; Means et al, 2013) or homogeneity of the respondents and predefined outcome measures (Rosenberg, Grad and Matear, 2003).

Only one relevant meta-review, which included both qualitative and quantitative studies in an integrative review evaluating the outcome of distance learning for nursing education, was found (Patterson, Krouse and Roy, 2012). The quantitative meta-reviews aimed to document the effectiveness of e-Learning by consolidating the data of a number of quantitative studies. The mixed-method meta-review mentioned above describes the state of the research, explains how the studies evaluate different outcomes and discusses different aspects of learning effectiveness. This is somewhat similar to the present paper, which also applies a mixed-method methodology in an integrative manner. However, many more research articles are considered in this paper due to broader selection criteria. Hence, this

paper is not concerned with re-investigating how effective e-Learning is, but rather with understanding the definitions, measurements and factors promoting e-Learning effectiveness.

The authors aimed to obtain a broad foundation of high-quality papers, from which a large but not pre-defined number was chosen for further investigation. Papers were chosen using a strategic randomised approach based on a purposive sample size, then analysed based on the concept of theoretical saturation (that is, the point at which new data no longer provide further insight into the subject at hand). In this integrative review, data analysis, data reduction and data displays are equally important (Whittemore and Knafl, 2005). The authors conducted conventional subject searches in 30 academic databases (J-stor, Scopus and Proquest, which includes 28 databases) to discover articles examining the effectiveness of e-Learning within the context of adult learning. All fields of research were included in the searches, as e-Learning can be used to support any subject. The searches only included articles in English, and where possible, only peer-reviewed journals. The chosen synonyms for ‘effectiveness’ include ‘transfer’ and ‘application’, which may have resulted in an overrepresentation of articles that define effectiveness as the application of learning content into work practices.

The searches resulted in almost 1000 articles. Articles clearly irrelevant to the subject were excluded, diminishing the number to 761. If an article contained an empirical study on the effectiveness of e-Learning and the solution under investigation was targeted at working professionals or students, then the abstracts were carefully coded and analysed in great detail using Nvivo 10. When doubts about the relevance or coding of the abstracts surfaced, the two authors discussed the abstract, decided on the best coding and documented what was learned from the discussion in a shared document.

FINDINGS AND DISCUSSION

This study was conducted as a descriptive cross-sectional study using 150 third-year nursing students selected using a stratified random sampling technique with the purpose of assessing the perception on learning through E-incubator among nursing students. Through the open ended questionnaire it could be recognised that the majority of the participants (86.6%) has accessed to digital devices and internet and they prefer to access on line based tools in their learning process rather than stuck into traditional learning tools such as referencing to library, face to face lectures with passive and monotonous learning environment and too much manual documents for assessment process. It emphasizes that accessing to modern technology in the learning process is more interesting than the traditional methods of learning. It is revealed that the 88% of the sample stated that E-platform is interesting and more user friendly. Most of the participants are females as it is 82% and 64% of the sample was from urban areas and the rest was from rural areas. Further almost all the participants had their own devices which can access to the e-incubator platform. Through the structured questionnaire it was recognised that the 60% of the sample has used E-incubator in their final year due to their unawareness and reluctance in adopting to a web based learning environment. 78% of the participants stated that through E-learning they can access to information whenever they required quickly. 70% of the sample suggested that full syllabus could be covered using e-learning platform and the 30% suggested that it should be covered using both e learning and the traditional learning. Therefore in this study these findings reveal that learners prefer to access to E-learning platform to cater their educational needs and they have more willingness to get adopted to the changes in web based learning environment rather than stuck into traditional learning methods in teaching and learning process with manual documentation of assessment system.

CONCLUSION

The results of the study highlights that the students' perception towards E-incubator was positive through open ended and structured questionnaire when considering the traditional teaching and learning methods such as face to face lecturing sessions, manual assessment system, referencing to libraries in search of new knowledge with limited number of reference editions. E-incubator is a modern and innovative concept for Sri Lankan nursing students who used to learn only utilizing traditional learning strategies. Students' positive perception and impression revealed that the change in this current system of nursing education is required with a web based learning environment which can cater all education needs of learners and motivate them to obtain new knowledge accessing to modern technological tools by creating user friendly, interesting and effective learning and teaching environment as E-incubator is one of the most appropriate methods to fulfil such educational requirement in the current nursing training sector.

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PREDICTING THE AUDIENCE-SUBSYSTEM AS THE DETERMINANT OF THE OUTCOME OF LEARNER-BASED VIDEO COMMUNICATION SYSTEM DESIGN

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ABSTRACT

The overall purpose of study was to extend theoretical concepts and theories in Science and Technology Studies (STS), that explain the difficulty in stabilising video in learning environments of student society. Hence, the audience subsystem of learner-based video communication was examined in requirement analysis as one determinant factor for the functionality of the system design. The basic design of the study was mixed methods that involved qualitative and quantitative analysis of STS concepts and field survey data on socio-cultural interactive relationships among audiences, to profile structural identity characteristics of smallholder-farmers and University-student audiences. Composition models of factors informed influences of respective sub subsystems which offered extraneous audience-related variables that contributed additional system design inputs to the functionality of video, towards mathematical modelling of audience behaviours. The major finding based on the design objective, was an altered functionality of video by diverse audience-related factors represented by contextual and external input variables, to determine the design outcome and stability of learner-based video communication design as socio-technical artefact. Linear variable differential equations of relationships between the factors predicted several outcomes as innovations among audiences, to imply that, socio-cultural diversity generated conflictive relationships that posed diverse challenges to audiences. This suggests to stakeholders that, although it might not appear difficult to assess individual learning from videos (Kumi and Dzidonu 2017b), some difficulty may be encountered in assessing class learning from videos, due to differences in perspectives and subjectivity in answers from examinees. Hence, video might not be appropriate for educational class assessments that require adoption of messages. The phenomenon extends theoretical concepts and theories in STS, and partly explains the difficulty in stabilising video in student learning environments.

Keywords: *Predictions, Learner-Based Video Communication, Audience-Subsystem, Requirement Analysis, Systems Design*

INTRODUCTION

The uses of learner-based video communication involved communication between actors at different hierarchical levels, and applied causal designs that expected direct effects of the design on the audience. However, as mass communication tool, the direct effects on audiences by Bentley and Van Mele (2011), David and Asamoah (2011), Bentley et al (2014) and Van Mele (2014) have disregarded that, the audience constituted a subsystem which could offer requirement system design input, to determine functionality and outcome of the system design (Enserink et al 2010, Baxter and Sommerville 2011 and Davis et al 2014). Moreover, interactive communication relationships between structural components of video and its audiences could be examined in the Systems Model Approach (SMA) (Enserink et al 2010).

Scholarships in Science and Technology or Society and Technology Studies (STS) (Feenberg 2010, Baxter and Sommerville 2011 and Davis et al 2014) have criticised the focus on causal relationships in technological artifacts using Social Construction of Technology and Interactions Theories, Socio-technical Systems principles, governance and social networks concepts in organisational studies, that could support mapping of audience subsystem variables that contribute design inputs, for predicting functionality and outcome towards evaluation of suitability of video communication system design in student learning.

LITERATURE REVIEW

Causal notions of technology development seemed to ignore influences from audiences and ‘irrelevant social groups and individuals in the wider social organization’ (Klein and Kleinman 2002) as sub subsystems, that fed the audience subsystem in the general system design of socio-technical artifacts (Davis et al 2014, Kumi and Dzidonu 2016). Consequently, contributions of the audience-subsystem towards outcome of the general system design were not considered in determining the functionality and outcome of video (Enserink et al 2010, Baxter and Sommerville 2011, Davis et al 2014, Kumi and Dzidonu 2016). This means that, authors did not account for contextual factors in the environment of audiences in determining the functionality and outcome of video. Since audience-related factors largely influenced the behavior of the audience subsystem (Klein and Kleinman 2002, Leeuwis 2004, Kumi 2013a, Davis et al. 2014, Scott 2017, Kumi and Dzidonu 2017a) as sub subsystems, those determined functionality or altered outcome of the general system design (Enserink et al 2010). This implies that, ignoring behaviors of sub subsystems in the functionality of the system design could increase risks of technological failures in video communication (Kumi and Dzidonu 2015). The paper mapped structural characteristics (Scott 2017) of audiences as sub subsystems of the audience subsystem towards analysis of contributions of the audience subsystem to functionality and outcome of video, in the Systems Model Approach (SMA) (Enserink et al 2010).

Feenberg (2010), Kumi (2013a, b, c), Bentley et al (2015), clarified the need to consider different aspirations (Leeuwis 2004, Kumi 2013a), variations in audience competencies (Müller 2008, Feenberg 2010, Kumi and Kumi 2012, Kumi 2012), diverse meanings and varied interpretations of events by audiences (Müller 2008, Hebinck et al 2011, Kumi 2012, Kumi 2013a, Bentley et al 2013), as well as different problem definitions of events (Ploeg 2008, Hebinck et al 2011, Kumi 2012, Kumi 2013a, Bentley et al 2013) in determining the functionality and outcome of video system design. The paper profiled influences of diversity in audience characteristics as sub subsystems of the audience subsystem of video communication system design as socio-technical artifact (Viller and Sommerville 2000, Waterson 2005, Martin and Sommerville 2004, Baxter and Sommerville 2011, Davis et al. 2014, Kumi and Dzidonu 2016). This answered Bentley, Van Mele, Okry, and Zossou (2014) who questioned effectiveness and efficiency of functionality of video. For this reason, the paper argued for definition of the boundaries (Walker 2000:13) of the audience subsystem and description of its structure (Enserink et al 2010) which included the actions, activities, workspaces, work practices and social relations, as sub subsystems (Feenberg 2010, Baxter and Sommerville 2011, Davis et al 2014). The approach could

generate additional functionalities and corresponding outcomes of video communication system design and contradict previous works by Bentley and Van Mele (2011), David and Asamoah (2011), Bentley et al (2014) and Van Mele (2014) which asserted that, videos transferred information to audiences effectively and efficiently in causal relationships even without facilitation by experts. To explain the contradictions, the paper predicted the interactive ability of learner-based video communication system design towards the functionality or outcome.

Institutional actors compromised exchanges of resources (Gaventa 2005) and provisions were exchanged by social actors and networks (Lewis et al 2003) in the forms of finances, authority, knowledge, people, information, relations, emotions and social capital in series of interdependent interactive relationships and engagements in transactions in the forms of arrangements and partnerships, governance mechanisms, alliances, forums, and advisory boards or task forces which gave rise to diverse significations in deliberations among social actors. The phenomenon could serve as potential avenues that allowed different actors to influence application and use of knowledge acquired in video (Kumi 2013) to result in the construction of different meanings of the same artifact by society due to differences in life worlds of audiences (Leeuwis 2004). This could cause conflicts, confusion and misunderstanding of issues and events among social actors (Van Bueren et al 2003). Hence, the study examined influences of contexts of audiences as sub subsystems in the audience subsystem which contributed requirement external design input, towards altering the general functionality and outcome (Enserink et al 2010), to evaluate suitability of learner-based video communication.

FINDINGS AND DISCUSSION

Definition of the Audience Subsystem in Video Communication

The audience subsystem in video communication was defined from the flow of information from one process to another through uniform entities of the components which engaged in transferring information in video, in order to achieve an outcome (David 2006), as in a typical systems model (Enserink et al 2010). In a typical systems model described by Silva and Ferrão (2009) and Enserink et al (2010), the entities represented subsystems that offered design inputs towards the functionality and outcome of the general design objective in data flow model. In Figure 1, 'heads' represented contributions from aspects or sub subsystems of the audience subsystem. In the diverse contexts of audiences, influences from different members or aspects contributed considerable intervening or extraneous factors as audience-related variables. The study argued that, the external audience-related variables contributed additional system design inputs to alter expected functionality and design objective of video communication system (Enserink et al 2010, Kumi and Dzidonu 2015). This could allow creation of potential platforms for innovations by audiences. The innovations of audiences could represent several outcomes of the same system design (Kumi and Dzidonu 2017b) due to the effects of extraneous variables in the contexts of audiences on the design objective, rendering learner-based video communication ineffective in student environments (Kumi and Dzidonu 2015).

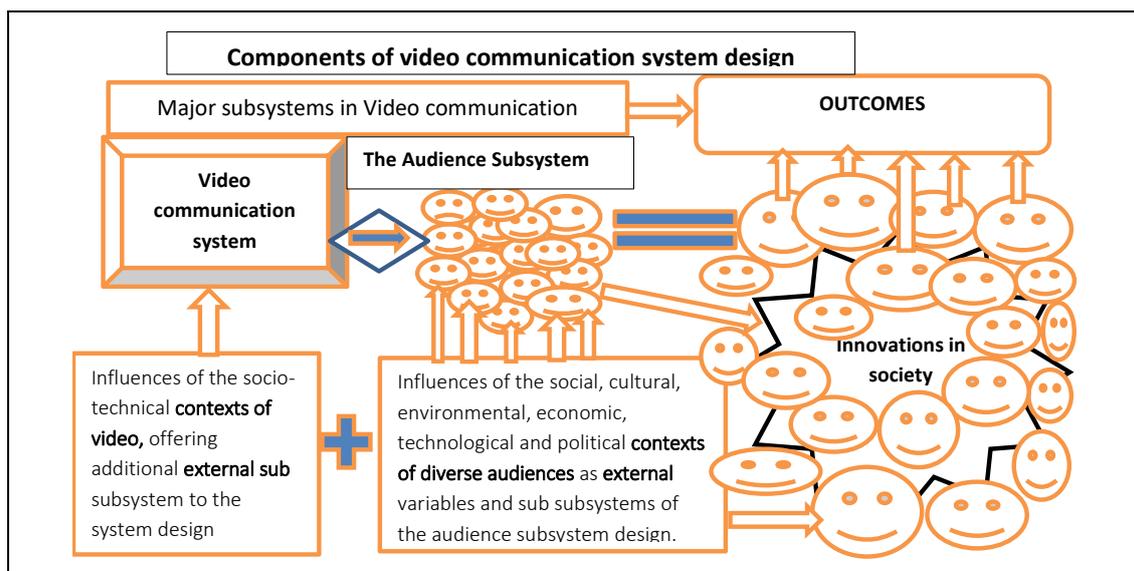


Figure 1: Human-machine Interaction Platform, Depicting the Desired Design of Video Communication System
Source: Authors’ Concept, 2017

Description of the Audience Subsystem of Video Communication System Design

Structural characteristics of audiences (Scott 2017) made up of smallholder farmers and University students, were profiled and the contributions of the audience subsystem to functionality and outcome of video, were analysed using the Systems Model Approach (SMA) (Enserink et al 2010) as sub subsystems of the audience system in video communication system design (Davis et al 2014, Kumi and Dzidonu 2016) to represent combination of variables, derived from the social, economic, political and cultural identity characteristics of viewers which constituted sub subsystems of the audience subsystem. In the description, the study considered relevant external attributes or ‘noise’ to include characteristic contexts of video-shows and influences of the wider social structural organization (Kumi and Dzidonu 2017b).

Social Structural Characteristics of Farmer-Audience by Category

Table 1 profiled categories of social structural characteristics of audiences relative to functions and social action to show sub subsystems of the audience subsystem.

Table 1: Profiled Social Structural Characteristics of Farmer-Audience by Category, as Sub Subsystems N = 150

Category of Audience	Profile of Smallholder-farmer Audience
By function and social action	Land Owners, Input Suppliers, Local Credit Providers, Knowledge Providers, Produce Buyers, Farmer-Creditors, Spraying Machine Operators, Machine Repairers
By work practices	Sharecroppers, Annual, Shared or Fixed Contract Laborers, Caretakers, Resident Farmers, Migrant Farmers, Poor Farmers, Women Farmers, Absentee Farmers

Source: Field Survey Data, 2016

Table 2 profiled categorized audience networks relative to the role, functions, social actions and crop-sharing arrangements, kind of institution, location and gender to show sub subsystems in the context of the audience subsystem in a learner-based video communication system design. The diverse factors could generate inputs from audience sub subsystems to influence functionality of video as external variables or sub subsystems in the shared social environment of video and its audience subsystem (Kumi and Dzidonu 2016a).

Table 2: Profile of Audience as Sub Subsystems of the Audience Subsystem in a Learner-based Video Communication System Design

Category of Farmer-audience Network by:				
Role	Functions, Social Actions and Crop-Sharing Arrangements	Institution	Location	Gender
Opinion Leaders	Sharecroppers,	Farm Owners	Resident Farmers	Women Farmers
Adopters of Innovations	Annual Laborers	Land Owners	Absentee Farmers	Poor Farmers
Knowledge Brokers	Caretakers	Farmer-Creditors	Migrant Farmers	Marginalized
Record Keepers	Resident Farmers	Financial Assistants	-	Rich Farmers
Farm Managers	Migrant Farmers	Annual Laborers	-	-
Land Owners	Poor Farmers,	Fixed Laborers	-	-
Sharecroppers	Women Farmers,	Shared Laborers	-	-
Contract Farmers	Absentee Farmers	machine repairers	-	-
Contract Laborers	Annual Laborers	Chain-saw operators	-	-
Farm Supervisors	Fixed Laborers	-	-	-
Caretakers	Shared Laborers	-	-	-
Farmer-Creditors	-	-	-	-

Source: Field Survey Data, 2016

Structural Characteristics of University Student-audience

In Table 3, the Student audiences related to Student-learning arrangements to profile different socio-economic, cultural and socio-political roles which represented sub subsystems of the audience subsystem. The profile suggested that, video might offer individual satisfaction for learning and provide avenues for individuals to share resources, perspectives and exhibit innovations. However, complexity in diversity of social structure of student-audiences coupled with diversity in challenges faced could result in conflictive relationships to offer additional sub subsystems. The result could be that, individual audiences might not adopt the same video messages (Kumi 2014, Kumi and Dzidonu 2015a). interactions among social networks of students due to re-definitions of the same event in video. The phenomena could be explained in the individual-differences theory of communication, which recognized the composition of audience as individuals who reacted to communication in their own ways rather than as duplicate automatons (Jones 1984, cited by Shelton 2004). This means that, individual students would exhibit selective exposure, perception and retention, therefore no matter what the message was intended, some of the audience would receive another, and migrate towards communications whose scope, tone, and messages would be in agreement with their own opinions and interest, and avoid communications they would not agree with (Shelton 2004). This partly explains why

David and Asamoah (2011) for example, recorded no significant differences in the outcome of video uses in training farmers. This suggests to stakeholders that, although it might not appear difficult to assess individual learning from videos (Kumi and Dzidonu 2017b), some difficulty may be encountered in assessing class learning from videos, due to differences in perspectives and subjectivity in answers from examinees. Hence, video might not be appropriate for educational class assessments that require adoption of messages.

Table 3: Structural Characteristics of University Student-audiences by Category N = 77

Category of Audience	Profile of University Student-audience
By function	Accounts Officer, Teacher, Secretary, Trader, Health Officer, Field Technician, Banker, Administrator, Fire Officer, Regular Student, Weekend Student, Photographer, Sobolo Producer, Purchasing Clerk, Cook
By social action	Opinion Leader, Single Parents, Deacons, Assemblymen, Youth Leader, YPG Member, Class Leader, Choir Member, Female Student, Male Student, Married Students, Single Students, Mothers, Fathers, Hostel Room Mate, Service Leader, Singer, Footballer
By learning practices	Regular Student, Weekend Student, Female Student, Male Student, Class Leader, Group Leader, Group Study Mate, Mature Students

Source: Field Survey Data, 2016

Predicting the Audience Behavior in Interactive Mode

Where $A \propto$ social organizational experiences of different groups of audiences A1, A2, A3, A4, The contribution of sub subsystems to the audience subsystem was presented in the model as follows:

$$A \propto (A1, A2, A3, A4, \dots)$$

$$A = K(A1, A2, A3, A4, \dots) \dots \dots \dots (i)$$

K is a constant that changes with time t , due to continually changing contextual challenges faced by the audience in a dynamic society (Wood 2009).

The model for specific group of audience, A1, is given by:

$$A = K(A1) \dots \dots \dots (ii)$$

The model (ii) represents requirement analysis of contribution of specific audience subsystem of a system design (Calker et al 2006, Silva and Ferrão 2009, Sokolowski and Banks 2009, Sully and Kukulka 2011, Kumi and Dzidonu 2017a). In instances of desired system behaviors, the aspects of design inputs in the audience subsystem could be constituted by sub subsystems such as: (1) audience category (u_1), (2) diverse characteristics of audiences (u_2), (3) the different aspirations (u_3), (4) different choices of members (u_4), (5) different cropping/learning needs of individuals and groups (u_5), (6) diverse innovativeness (u_6), (7) various structural profiles of the social, economic, political, cultural, environmental, economic and technological identity characteristics of viewers among others. Then, the functionality of one category of audience sub subsystem, A1, of the audience subsystem could be represented by:

$$A1,(u_1, u_2, u_3, u_4, u_5 \text{ and } u_6 \dots\dots\dots) \dots\dots\dots(iii)$$

Substituting for the different values of A1, A2, A3, A4 the functionality of the model A becomes:

$$A = K[(u_1 + u_2 + u_3 + u_4 + \dots)1 + (u_1 + u_2 + u_3 + u_4 + \dots)2 + (u_1 + u_2 + u_3 + u_4 + \dots)3 + (u_1 + u_2 + u_3 + u_4 + \dots)4 + (\dots\dots)] \dots\dots(v)$$

Evaluating the Audience Subsystem in Video Communication

The dynamic model of the relationship between video and its audience subsystem could be:

$$\frac{\omega V}{\omega t} = f [A(\acute{r}) + A(\grave{i}) + V(t)] \dots\dots\dots (1)$$

The model (1) predicts that, behaviours of both relevant and irrelevant members of society $A(\acute{r}) + A(\grave{i})$ which operated as system design inputs towards functionality of the audience subsystem of a given video system design at any given time, $V(t)$. Where;

$A(\acute{r}) =$ *Relevant Audience (audience closely associated with video design)*

$A(\grave{i}) =$ *'irrelevant audience'(people in the wider social organization)*

$V(t) =$ *kind of video system design at a specific time (t)*

Given that $(t) = [0, 6years]$, For $(t) = 1$,

(a) The model for the audience **without previous experience** (0) with video communication is:

$$\frac{\omega V}{\omega t} = f [(A(\acute{r})(1), A(\grave{i})(1), V(1 - 0))] \dots\dots\dots (2)$$

The model (2) predicts behaviours of the different kinds of audiences $A(\acute{r})(1), A(\grave{i})(1)$ who watched or experienced video for the first time or without previous experience with a kind of video.

(b) The model for the audience **with previous experience** (1) with video communication is:

$$\frac{\omega V}{\omega t} = f [A(\acute{r})(1), A(\grave{i})(1), V(1 + 1)] \dots\dots\dots (3)$$

The model (3) predicts behaviours of different kinds of audiences $A(\acute{r})(1), A(\grave{i})(1)$ who have gained first time experience (1), with a kind of video design $V(1+1)$.

Six years after experiencing or associating with video communication design ($t - 6$), the behaviours of audience-related design inputs could be described as follows:

$$\frac{\omega V}{\omega t} = f [A(\acute{r})(t), A(\acute{r})(t - 6), A(\grave{i})(\acute{r})(t), A(\grave{i})(t), A(\grave{i})(t - 6), V(t - 6)] \dots\dots\dots (4)$$

Where,

$A(\acute{r})(t)$ = Relevant Audience at specific time, closely associated with video design
 $A(\grave{i})(t)$ = 'irrelevant audience' (people in the wider social organization of a given society at specific time)

$A(\grave{i})(\acute{r})(t)$ = mix of relevant and irrelevant audience in society at any time

The model (4) predicts that: The audience-related variables

$A(\acute{r})(t), A(\acute{r})(t - 6), A(\grave{i})(\acute{r})(t), A(\grave{i})(t), A(\grave{i})(t - 6)$ either singly or in combination constitute required sub subsystems design inputs that determined functionality and outcome of video communication even after 6 years of experiencing video by audiences. This implies that, the audience subsystem continuously determined stability of the design in its social environment in the long run.

CONCLUSION

Continually changing and multiple contextual variables render the audience subsystem unstable to contribute steady requirement system design input, as student learning tool, hence, determinant of functionality of video system design.

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TABS VS BOOKS: A STUDY ON ACCEPTANCE OF NEW TECHNOLOGY AMONG STUDENT NURSES, SRI LANKA – 2018

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ABSTRACT

One of the most important skills that healthcare professionals in Sri Lanka lack is the use of Information Communication Technology and grasping of current technology has been quite challenging. One way of overcoming this issue would be to familiarise oneself with basic devices such as smartphones, tablets and computers. However, as a country trying to keep up with the pace of the rest of the world, it is necessary to assess the healthcare professionals' acceptance of new technology prior to implementing it. A descriptive cross-sectional Quantitative study was done using a convenience sampling technique. As the sample, Bachelor of Nursing first-year students who were working in hospitals at the time, were selected. A Computer-Assisted Personal Interviewing technique was used to collect data from 135 working nurses and data analysis was done using Microsoft Excel and Statistical Package for the Social Sciences version 22. Among the participants, the highest percentage was under 30 years old (73.3%, n = 99), only 9% (n = 8) were male nurses. Of the total, 85.1% had the experience of using a smartphone for more than 2 years. There was no significant difference between age and the years of using smartphones according to the Pearson Chi square test ($p = 0.147$). Most of them have used a tab for less than 2 years (average 68.1%). There was a significant difference between age and the preferred method for future (tabs/books) ($p = 0.045$). Similarly, 94.9% believed that books alone would not help them grow professionally. Finally, 88.8% of them confirmed that they would be satisfied using a Tablet instead of Books. In conclusion the majority of the nurses were satisfied with the use of tablets rather than books and believed that it would help further their professional growth.

Keywords: *Tablets, ICT, Satisfaction, New Technology, Education*

INTRODUCTION

Background

Nursing students require a wide variety of health information in order for their educational and clinical needs to be met. Many healthcare professionals, due to time constraints, prefer obtaining reliable but easy to use and convenient information (Lathey and Hodge, 2001; Dee and Blazek, 1993) Print materials such as journals and nursing textbooks, and information from colleagues or professional superiors are few of the most preferred resources for nursing information (Cogdill, 2003; Rasch and Cogdill, 1999). However, from mid-1990s, the use of electronic equipment for information retrieval was found to be increasing in popularity worldwide (Verhey, 1999). The literature also noted that even though the use of electronic devices among nurses is increasing, they have not been optimally used. This was found to be mainly due to either the lack of time to search for information (Curtis, Weller and Hurd, 1997), lack of access to a device (Grajek et al., 1997) or lack of Information Communication Technology (ICT) skills making them reluctant to use the devices (Bachman and Panzarine, 1998). ICT skills are becoming an integral part of quality healthcare delivery by nurses and, it is important that student nurses use ICT in order to develop the skillset as well as gain confidence (McCaughan, Thompson, Cullum, Sheldon and Thompson, 2002). Furthermore, for working nurses who are doing higher studies, due to the heavy workload, geographical distance, costs, etc., doing e-learning or hybrid learning would be the best way of learning (Nicoll, MacRury, van Woerden and Smyth, 2018).

Sri Lanka is a developing country and compared to the international standards, the healthcare systems are still developing. Even though the world is moving more towards e-health, Sri Lanka is still at a stage where the healthcare workers are not using the electronic devices efficiently (Rouleau et al., 2017) and thus ICT. In order to overcome this issue, it is important to implement a programme where the student nurses use electronic devices for their studies. This would in turn enhance their ICT skills (Button, Harrington and Belan, 2014; Ilomaki and Rantanen, 2007) and they would be more confident in using information technology for their patients' benefit. However, before implementing the programme, it would be important to assess the nursing students' attitudes towards the use of new technology or to assess the level of satisfaction among the nurses who are currently using new technology. This would ensure a successful implementation of the programme (Nicoll, MacRury, van Woerden and Smyth, 2018).

Research Question

Are the nursing students accepting of new technology to be incorporated into their studies?

Objectives

The objectives of this study were to:

- Assess the satisfaction of nurses following a Bachelor's Degree in Nursing (BN) on using Tablets for the course instead of books.
- Assess the level of acceptance of the nurses to incorporate new technology into their learning methods.

LITERATURE REVIEW

Kruse and Beane (2018), in their systematic review, noted that health Information Technology (HIT), which is used to describe a variety of technologies used to store, share and analyze health information, has been there in healthcare industry since 1960s. After reviewing 37 studies and analyzing their data, Kruse and Beane came into conclusion that there are positive effects of HIT, as found out by a majority of the literature, on effectiveness of the outcomes. They further went on to state that the practitioners who have knowledge and skills in HIT are sustainable in the future. In another systematic review on Electronic Health Records (EHRs) done by Kruse, Stein, Thomas and Kaur (2018), the authors have noted that HIT is positively changing the healthcare industry. This study was done to identify the barriers of implementing EHR and they have found out that resistance to change was one of the main barriers. It is evident from the above studies that ICT is one of the skills that nurses should possess in order to change with the ever-changing world.

Gunawardana (2007) noted in his study that the modern world is transforming from industrial society into the information society. The speed of this advancement, mainly in the developed countries, is demanding urgent action to be taken by the developing countries. He further noted that it is necessary that people make themselves familiar with computers and that using them in schools might help; however, putting that into practice would not be easy as it seems. Similarly, in a study done in United Kingdom, Somekh (2008) mentioned that teachers have been trying to adopt ICT into teaching for few decades, and further noted that there are so many barriers hindering that. They mainly included teachers' as well as students' knowledge and beliefs. Gunawardana further mentioned in his study that IT is not properly integrated into the education system in Sri Lanka and because of that the knowledge gained during schooling is not adequate. Furthermore, it was noted that Sri Lanka as a country is far behind the other developed countries and even the government is still in the infant stage when ICT is considered. There were few recommendations in the study including increase in internet usage in the country and increase in computer usage by at least five folds.

Nicoll, MacRury, van Woerden and Smyth (2018) have done a systematic review on Technology-Enhanced Learning (TEL) Programs for Health Care Professionals. TEL includes all the digitally-mediated activities. In the study, they have found out that TEL has three potential benefits including efficiency, enhancement and transformation, which is also mentioned in The Higher Education Funding Council for England's e-learning strategy. The study also points out the fact that TEL is increasing in demand due to resource and time constraints as well as popularity of blended learning formats. It was also mentioned that the availability of mobile devices would enable the learner to learn/train easily, whenever and wherever it is suitable for them.

Button, Harrington and Belan (2014), conducted a literature review on e-learning and ICT in nursing education, where they found out that e-learning is one of the most significant changes that happened in nursing education. They also noted that the successful implementation of e-learning depends on ICT literacy among both educators and students. This study concludes stating that the ICT and nursing informatics knowledge that the students gain would equip the nursing students with life-long learning skills. In addition to that, Ilomaki and Rantanen (2007), in their longitudinal study, have tested the relationship between usage of a laptop and the development of high-level computer skills and competence in ICT. They have given a laptop to 18 lower-secondary school students for 3 years to be used both at school and at home. Then they have assessed the students' ICT competence and found out that the students who have done ICT-related tasks outside the school have achieved competence.

METHODOLOGY

Method

A descriptive cross-sectional quantitative study design was used, in order to answer the research question of this study.

Population

First-year nursing students following Bachelor in Nursing (BN) course at International Institute of Health Sciences (IIHS) were chosen as the population for this study. They were considered to be the appropriate population for the study as BN nurses are learning in a hybrid learning environment and as they are required to use a Tablet for their studies. They start using the Tablet from their first semester and the second semester was considered to be the best time period to assess their acceptance of this new technology as they had been using the technology for some time but still can be considered new to that technology. The total number of BN first-year students was 200.

Inclusion and Exclusion Criteria

- All the nursing students following a BN program who were in their first year were included.
- Only the nursing students who are currently working were included.
- Only the BN students who gave their consent were included.
- All the BN students who were not willing to provide consent were excluded.

Study Sample

The sample size was calculated using Raosoft. The required sample size for the total population, for 95% confidence level, was 132. However, 135 BN first-year nurses were approached using a convenience sampling technique to select the required sample for the study. The study was done among three batches of BN first-year nursing students.

Data Collection

Computer-Assisted Personal Interviewing (CAPI) was used to collect data where the data was collected using Tablets. The survey included 11 questions on demography and on the acceptance of Tablets instead of books.

Data Analysis

Data was arranged and initial analysis was done using Microsoft Excel and further analysis and cross tabulation was done using IBM SPSS version 22.

FINDINGS

Total number of responses were 135, out of which male participant percentage was only 7% (n = 9) (Figure 1). The highest percentage of the participants (73%, n = 99) was below 30 years of age, whereas the lowest (6%, n = 8) was above 40 years of age (Figure 2).

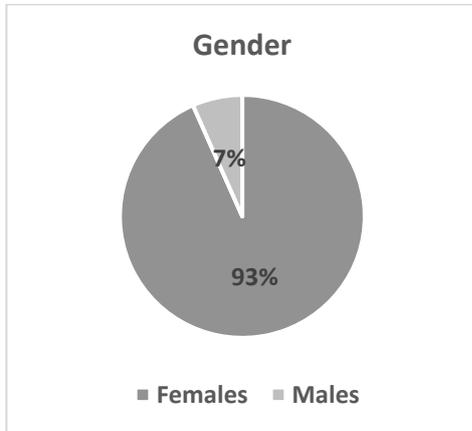


Figure 1

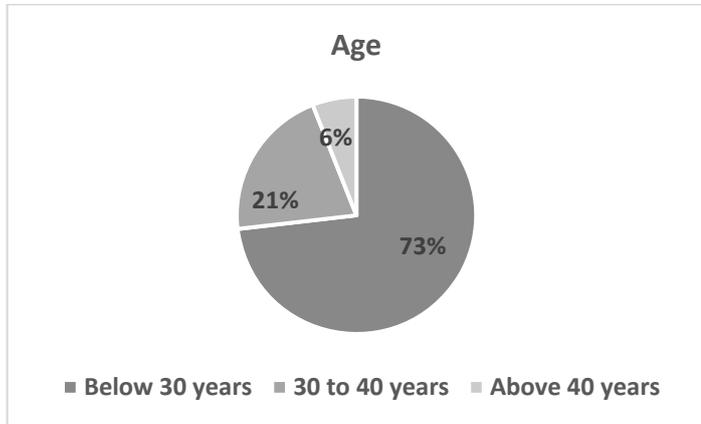


Figure 2

Majority of the participants (85.1%, n = 115) have used a smartphone for over 2 years; however, there is no statistically significant difference ($p = 0.147$) between the years of usage of smartphones and age (Figure 3, Table 1). The usage of Tablets, however, was very limited among the participants where majority (68.1%) of the participants have used a Tablet for less than 2 years, out of which 49.5% have never used a Tablet before (Figure 4).

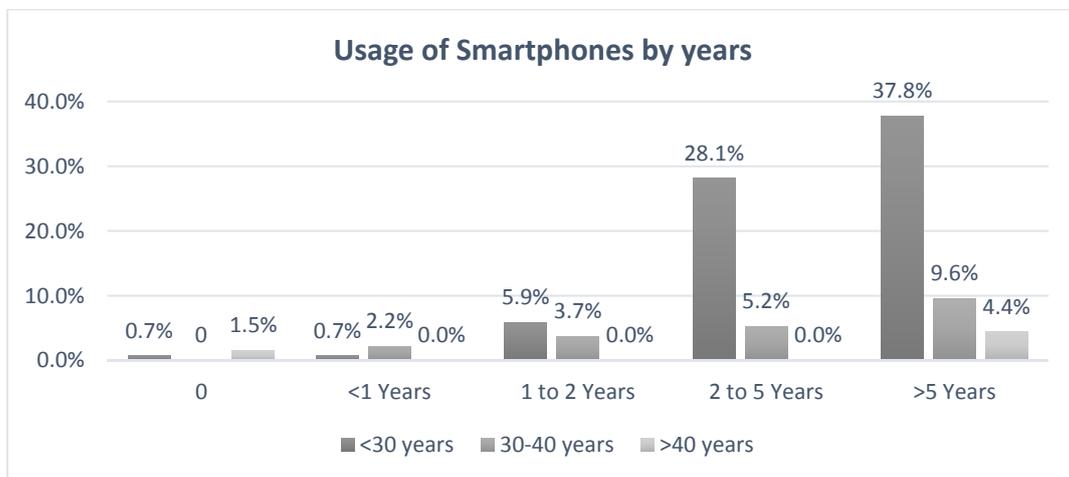


Figure 3

Table 1: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2.102 ^a	1	.147		
Continuity Correction ^b	1.492	1	.222		
Likelihood Ratio	2.181	1	.140		
Fisher's Exact Test				.175	.110
N of Valid Cases	115				

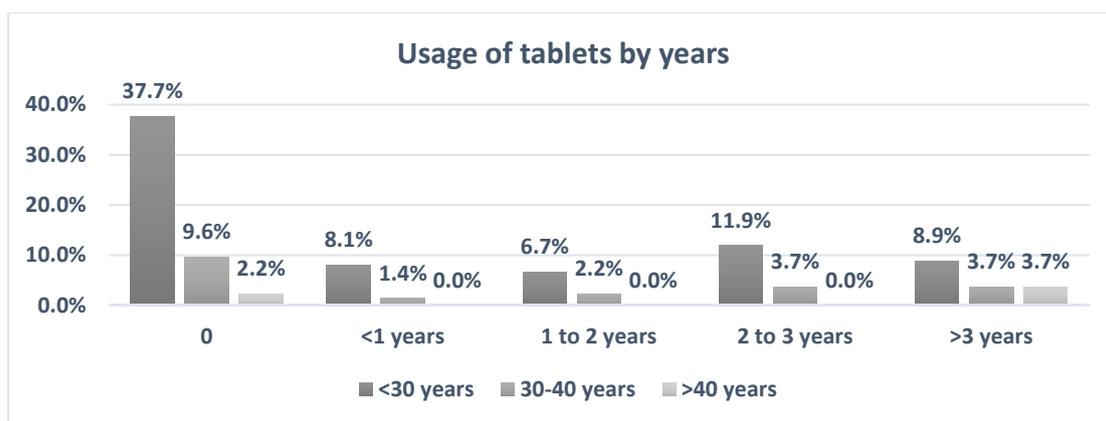


Figure 4

With regards to the preferred method for future studies, majority stated that they would prefer using Tablets over books. There is a statistically significant difference between ($p = 0.045$) age and the preference with the participants below 30 years of age are mostly preferring to use a Tablet for their studies than the other age groups (30 – 40 years and over 40 years) (Figure 5, Table 2).

Nearly all participants stated that using a Tablet would contribute to enhancing their professional growth. It was also evident that the majority (90.4%, $n = 122$) were either satisfied or very satisfied with the usage of Tablets and none of the participants reported to be dissatisfied (Figure 6).

Overall findings show that the majority of the participants who are the first-year Bachelors of Nursing (88.8%, $n = 120$) students, would choose to use a Tablet for their studies over the usage of learning guides and text books (Figure 7).

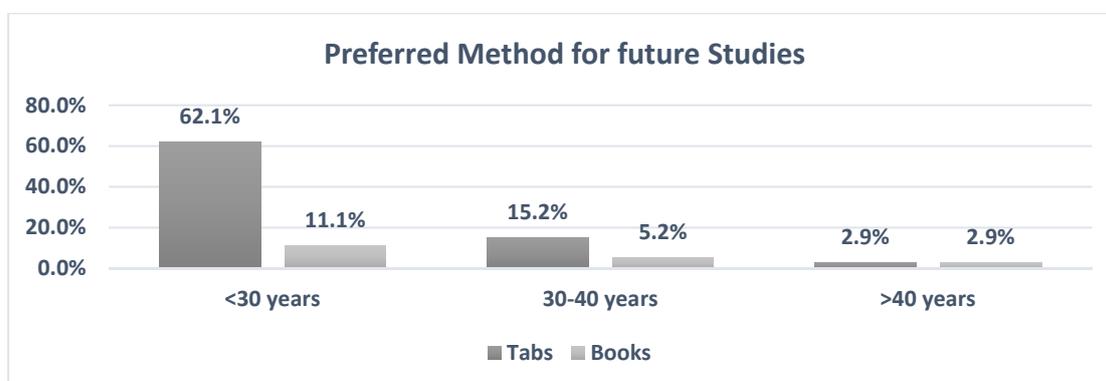


Figure 5

Table 2: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	4.028 ^a	1	.045		
Continuity Correction ^b	3.099	1	.078		
Likelihood Ratio	3.758	1	.053		
Fisher's Exact Test				.052	.042
N of Valid Cases	135				

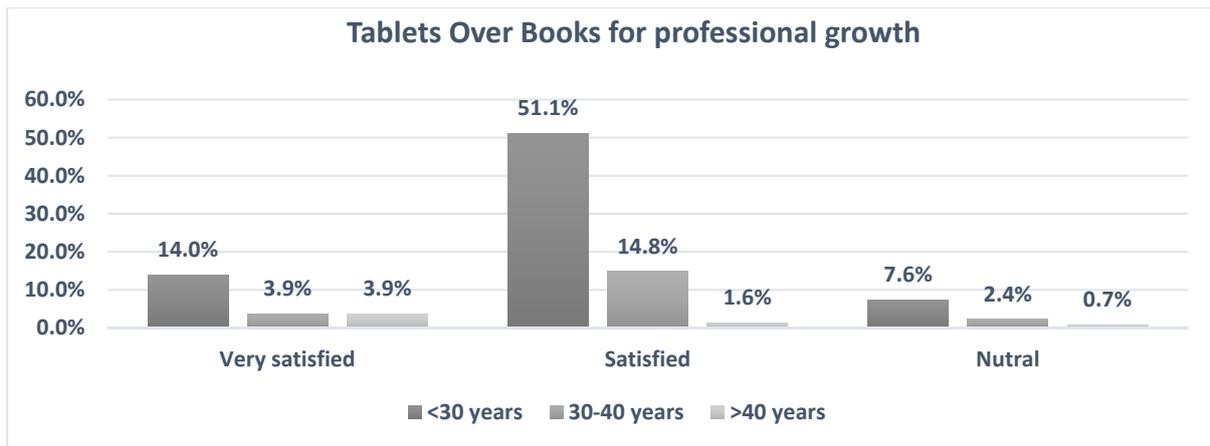


Figure 7

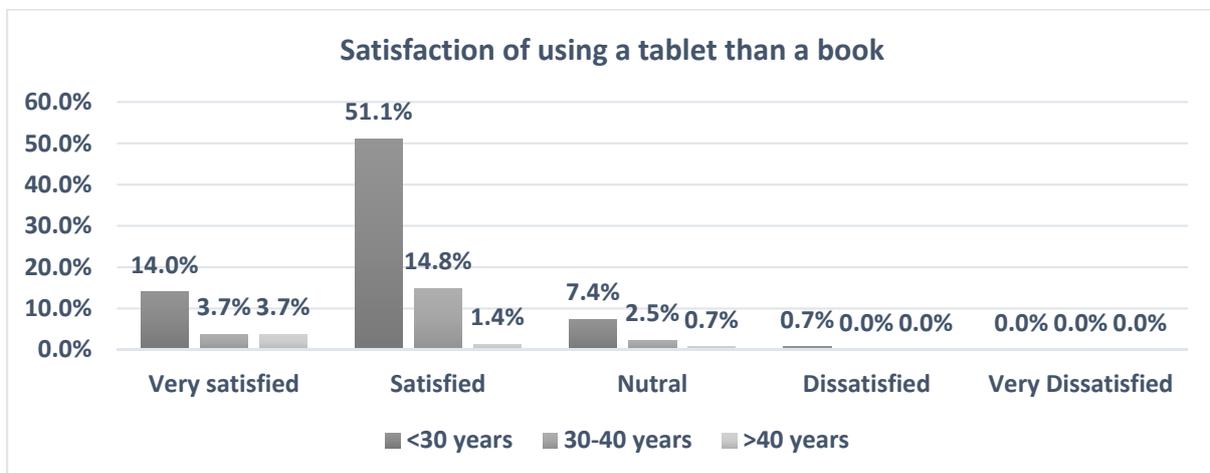


Figure 8

DISCUSSION

Gender plays a major role in acceptance of new technology where males are grasping new technology well than females (Goswami and Dutta, 2016). The difference of the percentages of two genders in this study were significant where the percentage of female population was 93%. However, the percentages of males and females reflect the country's nursing statistics as the male nurses amount to only 5% in Sri Lanka (GMOA, 2010). When considering the ages of nurses the majority in the hospitals would be about to retire. However, the majority that would do their further education would be the younger nurses. This could be the reason why the distribution of the age of the nurses was as noted in Figure 2.

Mobile phone usage in Sri Lanka has been rapidly increasing over the past decade and smartphones are found to be the electronic device used by more than half of the internet users whereas usage of Tablets is around 2% (Department of Census and Statistics Sri Lanka, 2017). Similarly, majority of the participants in the study have used a smartphone for more than 2 years whereas the about half of the total participants have never used a Tablet before.

According to government statistics, computer/IT literacy is high among people below 30 years of age (Department of Census and Statistics Sri Lanka, 2017). The percentages reduce further when they are not competent in English to about half of what would be if they are English literate. This is due to them being able to surf through English-only websites (Gunawardana, 2007). The IT literacy would determine the user being able to handle new technology such as e-learning/e-books and this would determine their preferences. That could be the reason why a majority of the nursing students below 30 years of age are preferring to use e-books over others ($p = 0.045$).

In all the developed countries, technology is integrated into healthcare. Similarly, developing countries are trying to adopt the latest technology such as HIT and EHRs into their healthcare systems (Kruse, Stein, Thomas and Kaur, 2018). This would require the nurses to use at least some of the new technologies. This requirement would make the nurses aware of the demand. Similarly, it could be identified from the results that even though some of the nurses are not willing to do e-learning, they think that would help them in growing professionally.

Finally, in order to implement e-learning, it is necessary that the nursing students accept the new technology and that they are satisfied in using the new technology. This would make sure of the sustainability of the programme. Furthermore, this would enhance their acceptability of new technology in their practice. The participants in this study responded to note that majority are satisfied or highly satisfied in using Tablets over books for their studies and that could mean that they are aware of the benefits of using a smart device and e-learning. The minor percentage in neutral category could be due to some believing that it is not necessary for their development or due to some of the technical failures that they may have faced during the period they have used the Tablet.

Limitations

This study, however, has its limitations as this was done only among nursing students who are following their BN degree at IIHS. There are three more degree awarding institutes/universities in Sri Lanka and generalizability of this study into those three institutes/universities would be difficult. Furthermore, there could be factors affecting their responses such as them assuming the freely given Tablet might be collected back, despite informing them it is not going to happen prior to getting the confirmation. Furthermore, all of the approached nursing students provided consent and submitted their responses possibly due to them again assuming it could arise an issue for them.

CONCLUSION

The highest percentage was under 30 years' old females. Majority have been using a smartphone for more than 2 years. No significant difference between age and the years of using smartphones ($p \geq 0.05$). Majority used a tab for less than 2 years. Significant difference ($p < 0.05$) between age and the preferred method for future (tabs/books). Majority believed that books alone would not help them grow professionally. Overall, the participants were satisfied in using a Tablet instead of Books.

It could be recommended that the awareness regarding technology be improved among nursing students as the use of technology could save time, energy and resources. There should also be further research done on the aspects of current usage of technology in hospitals, level of ICT knowledge among international nurses, and facilitators and barriers in implementing latest technology in Sri Lankan settings. This would provide a baseline for Sri Lankan nurses and implementing latest technology in hospitals would be possible.

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TEACHING & LEARNING VIA CHATBOTS WITH IMMERSIVE AND MACHINE LEARNING CAPABILITIES

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ABSTRACT

Chatbot is a computer program that simulates human conversation through voice commands or text chats or both. Chatbots are designed to convincingly simulate how a human would behave as a conversational partner. Chatbots with artificial intelligence technology can be used to teach the students by turning a lecture in a series of messages to make it look like a standardised chat conversation. The paper describes the development of intelligent chatbots that had been built for Java programming course. Most of the learning courseware/systems to learn Java programming language are merely repository of static and monotonous contents such as hyperlinked online tutorials, video lectures, etc. In order to address these shortcomings, seven text-based conversational chatbots for the students to learn Java in an interactive and engaging manners had been built. Each of these chatbots focuses on different programming concepts or constructs. These chatbots support learning of Java via problem-solving steps through “learning by doing”. The unique features of these chatbots are (i) The chatbots are self-contained, interconnected and are able to initiate a learning process for a particular learning outcome and provide feedback to a student as they are working through problems; (ii) These chatbots are able to engage the learners’ in the “one-to-one” session of the problem-solving process for more than one-hour through conversing with a student; and (iii) It supports immersive learning in order simulate the realistic scenarios and environments that give learners the opportunity to practice skills and interact with the simulated tutor. These chatbots acquired its intelligence through a hybrid approach that combines pattern-matching technique and machine learning algorithm in order to formulate its responses. The feedback from the students who used these chatbots and the effect of these chatbots on the students’ understanding of the subject matter were favourable as discussed in the paper.

Keywords: *Chatbot, Immersive Learning, Machine Learning*

INTRODUCTION

There are four modes of interaction that can be found in an online learning environment, namely student-student, student-instructor, student-content and student-interface (Thurmond & Wambach 2004). The student-interface interaction is a new form of interaction, thanks to the increased processing power of computers and the advancement made in the field of artificial intelligence (Thurmond & Wambach 2004). The student-interface interaction is defined as the interaction between the learner and the tools needed to perform the required learning task. In most cases, student-interface requires active participation from the user. This eventually demands active learning behaviour among the learners. There are various ways that can be adopted to realise the student-interface interaction. One way to do it is through the chatbot. Chatbot is a computer program that simulates human conversation through voice commands or text chats or both (Frankenfield, 2018). Chatbots are designed to convincingly

simulate how a human would behave as a conversational partner (Frankenfield, 2018). Chatbots with artificial intelligence technology can be used to teach the students by turning a lecture in a series of messages to make it look like a standardised chat conversation (Singh, 2018).

PROBLEM STATEMENT

Learning to program especially Java is difficult (Guzdial & Guo, 2014). Most computing educators will be familiar to the struggles of their students as they battle in vain to understand the basics of programming concepts and its constructs (Gomes & Mendes, 2007). This problem occurs as many students lack the generic problem solving skills. The students don't know how to create algorithms, mainly because they don't know how to solve a given programming problem. Many programming students don't establish correct analogies with past problems and don't transfer prior knowledge to the new problems (Gomes & Mendes, 2007). As such, many times students base their solutions on unrelated problems, leading to incorrect solutions and lack of reflection about the problem and the solution. This problem is compounded with the fact that most of the learning courseware/systems to learn Java or any programming languages are merely a repository of static and monotonous contents such as hyperlinked online tutorials, video lectures that failed to deliver programming courses effectively. In addition, the method of teaching programming subjects by the instructors also create problem for the students to understand the subject matter. Programming instructors tend to teach dynamic concepts of programming through static materials. In addition, instructors are more concentrated on teaching a programming language and its syntactic details, instead of promoting problem solving skills (Gomes & Mendes, 2007).

PURPOSE

The objective of the paper is to:

- Propose a conversational intelligent chatbot that will support the teaching and learning of Java

CHATBOT DESIGN

The proposed chatbot environment consists of a few different parts as shown in Figure 1. One of them is the user messages. User messages are a dynamic input that the chatbot can receive at any given time from a user (i.e. student). The message can be in the form of constraint-dialogue or open-ended replies from the students. They consist in a string representing the actual text sent by the user. The chatbot can only read the information it contains with no possible means of modifying it. The chatbot uses pattern-matching (i.e. rule-based) to process the "constrained-type" and certain open-ended messages. On the other hand, machine learning technique is used in order to process the domain-based questions from the students and subsequently to formulate the appropriate replies.

The chatbot also has the ability to send replies to the users in order to obtain new information. Replies from the chatbot sent through an automated tutor can be in the form of plain text, messages with a QR code/linked to an immersive learning object or linked to an interactive exercise. Plain text-based replies are formulated either through pattern-matching algorithm or via machine learning capabilities. Some of the replies from the chatbot requires the students to refer to the work area of the chatbot that will present the incomplete algorithms, visualize the problem as well as explain the programs in a dynamic approach (refer Figure 3 & Figure 4).

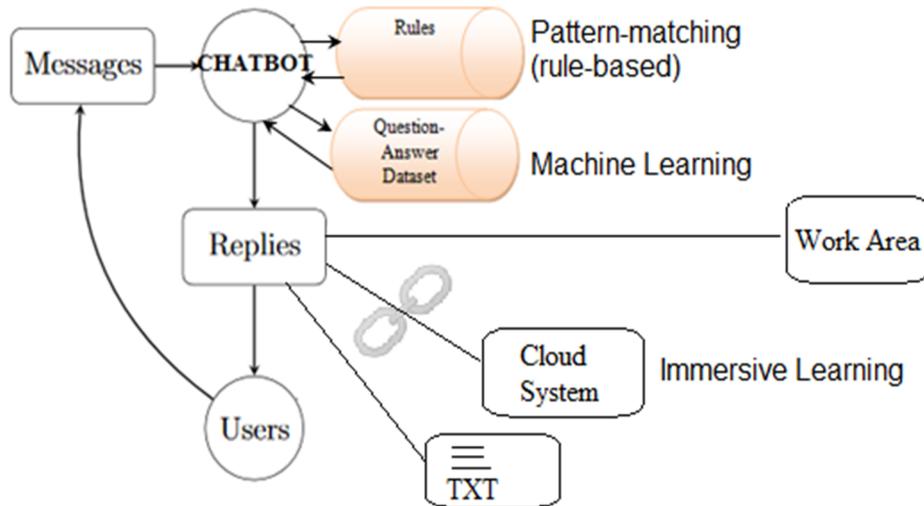


Figure 1: Chatbot environment

The chatbot is self-contained and have the ability to provide context-sensitive hints and instruction to guide students towards the next steps. The author, who is also an expert in Java, has injected all the domain knowledge via rules into the chatbot and also pre-determined the flow of the conversation in the chatbot. The chatbot will start from program design (algorithm construction), program development and ends with program execution. A programming problem will act as an anchor in the chatbot. All these are contained through the finite steps controlled by the chatbot using rule-based approach. Figure 2 shows the steps gone through by the learners when interacting with the chatbot.

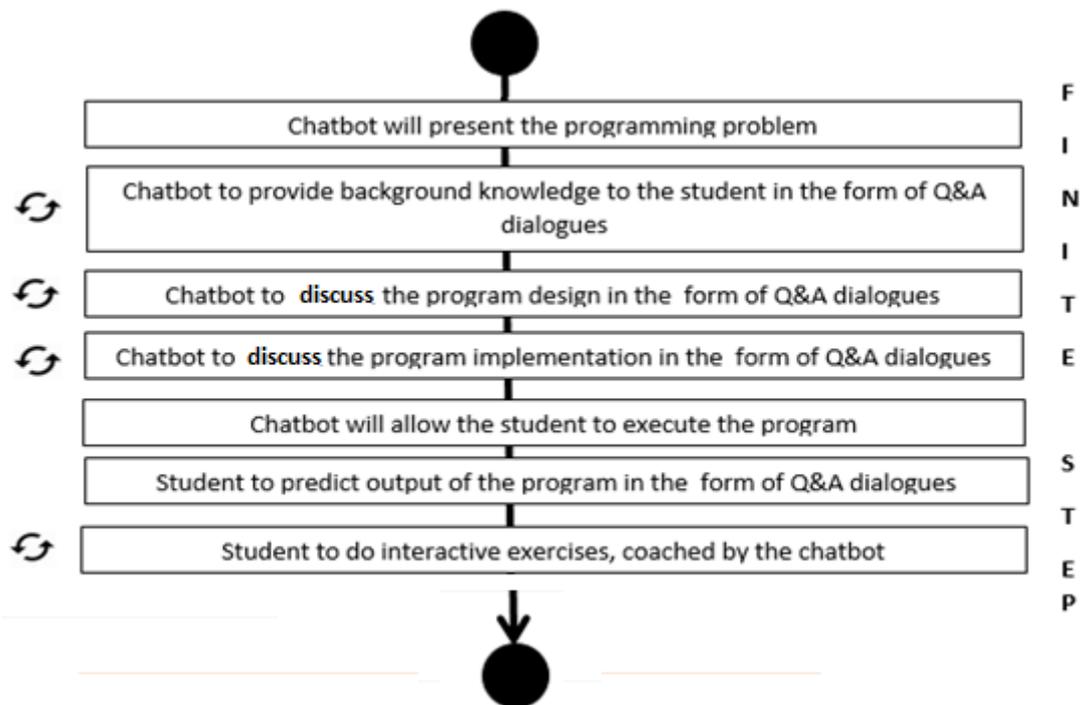


Figure 2: Steps gone through by the learners when interacting with the chatbot

The chatbot supports “real-time” human-like dialog to help students learn Java in an interactive and engaging way via an automated tutor (refer Figure 3). In addition, the chatbot is able to carry on a running conversation, complete with probing questions, positive and negative feedback, follow-up questions and requests for explanation as to why something is correct as well as interactive exercises based on “behaviour recording” approach. The chatbot allows the learners to actively construct knowledge through conversation with an automated tutor in order to solve a programming problem by engaging them in a “one-to-one” session of the problem-solving process for more than 1 hour. Figure 4 shows some of the main features of the chatbot.

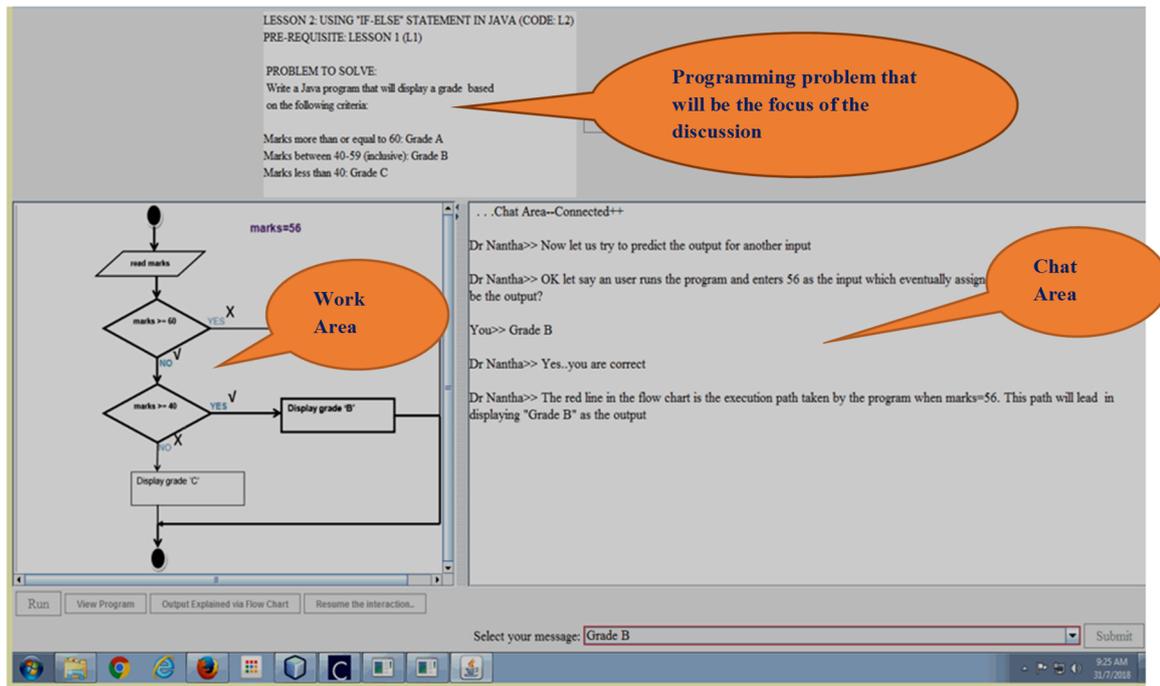


Figure 3: The interface of chatbot

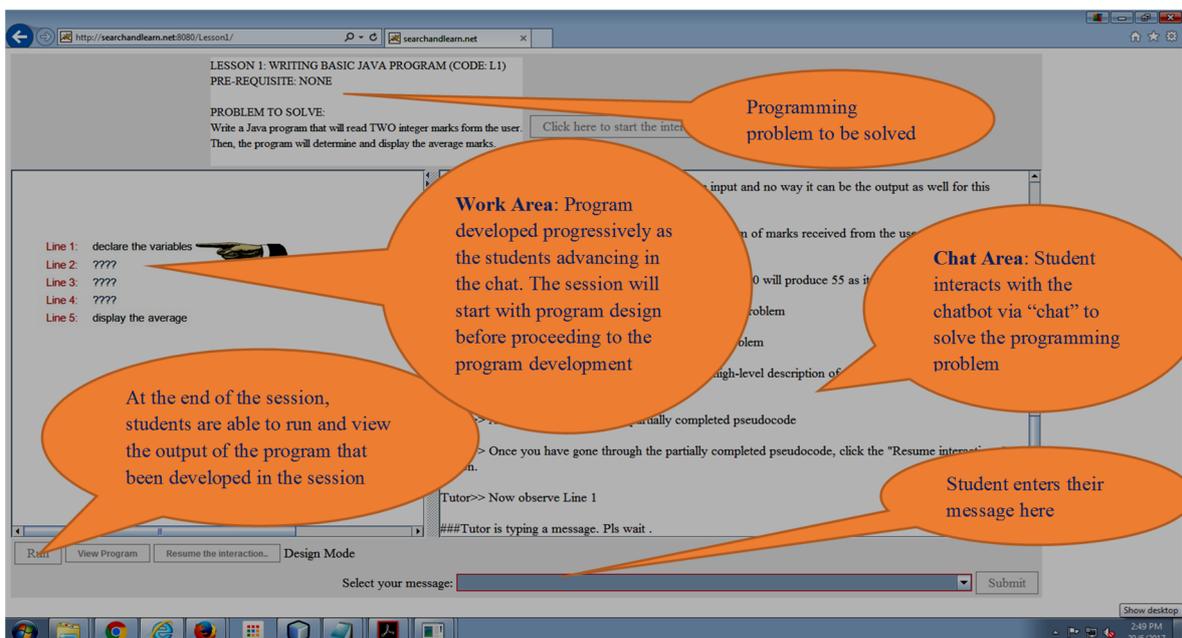


Figure 4: Some of the main features of the chatbot

Immersive Learning

Immersive learning is the process of learning with the usage of a simulated or artificial environment. The environment enables the learners to completely get immersed in the learning and in a way that feels like experiencing an actual learning environment (<https://raccoongang.com/blog/immersive-learning-explained/>). While dialogues/conversation are important in learning programming but programming can't be learnt entirely through these type of communication. Thus, the chatbot also support immersive learning and visualizations, so that difficult Java programming concepts can be explained easily for easy understanding and to reduce the mental load of the students when learning programming. The links are given in the form of reply from the chatbot (see Figure 5). The author has used cloud platform to develop and host the highly interactive contents in order to support the immersive learning. The chatbot also has interactive exercises developed through the example-tracing approach based on behaviour graph. It provides contextual hints in order for the students to solve a programming problem (see Figure 6).

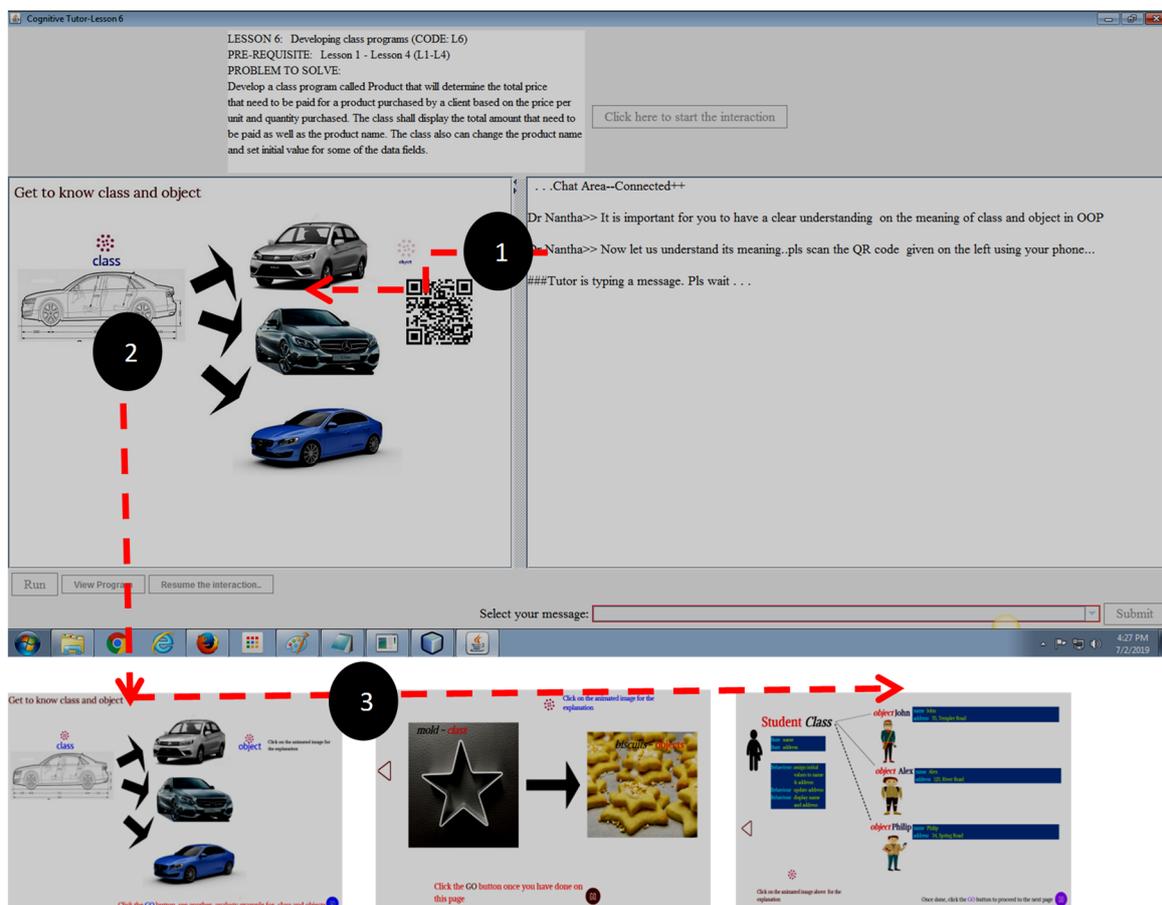


Figure 5: Immersive learning in the chatbot

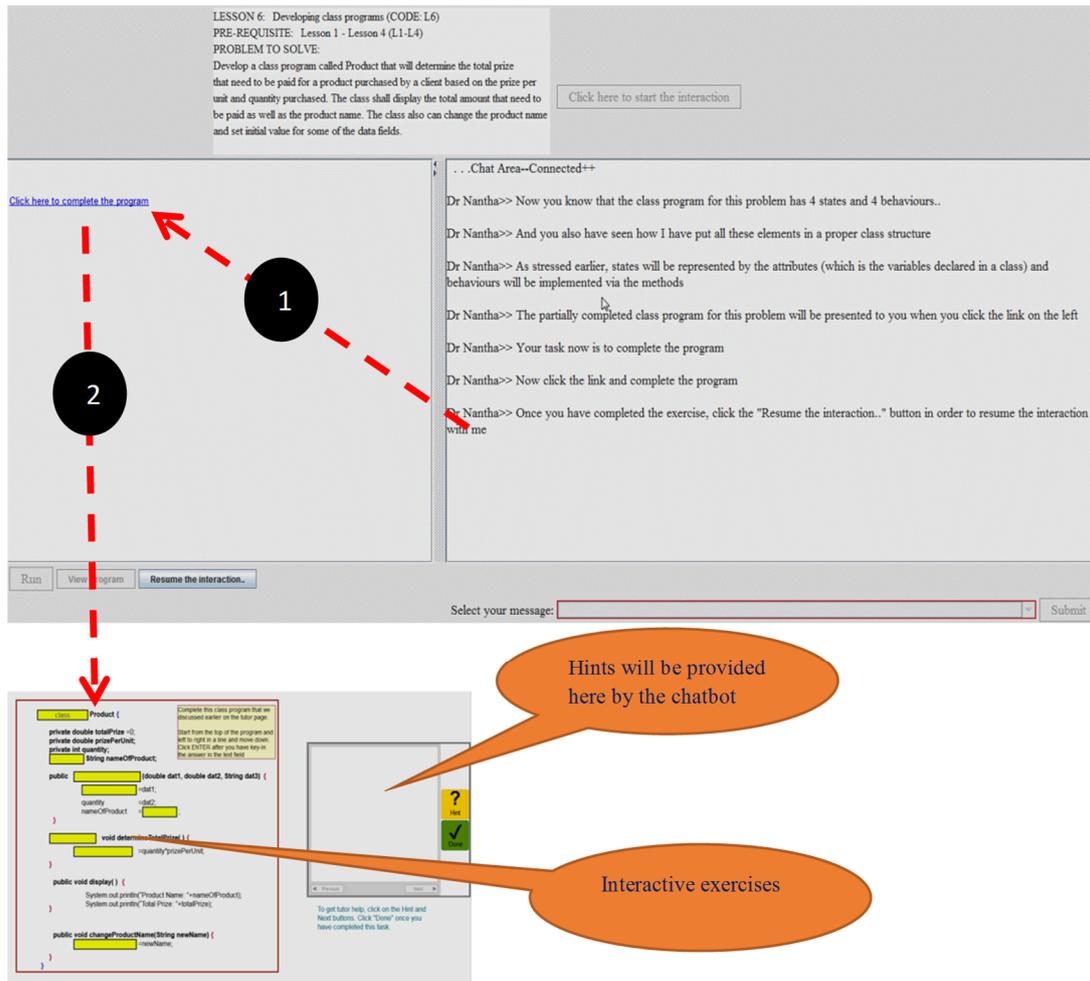


Figure 6: Interactive exercises presented by the chatbot at the end of the session to conclude the lesson

Machine Learning

In this study, SEVEN chatbots focusing on different concepts of programming had been built for the undergraduate CBOP3203 (Java Programming) course. As a pilot study, the work in this paper attempts to employ deep learning technique to provide an automated question answering facility for Java through one of the chatbots. The work builds upon recent work in sequence-to-sequence (Seq2Seq) deep learning model through recurrent neural network (RNN) by Chollet (2017) to construct answers that combine the English language with the Java programming language. Chollet (2017) used encoder-decoder concept in the sequence-to-sequence network in order to produce the output such as “answer” for a given input such as “question” based on the training data (see Figure 7).

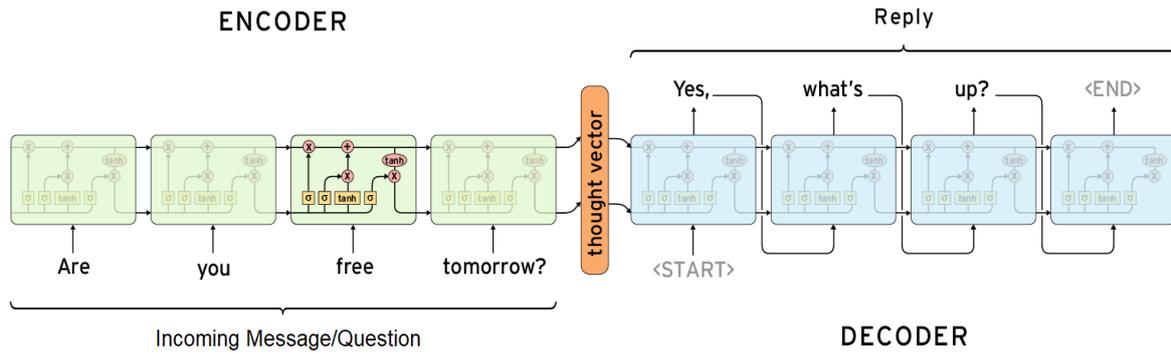


Figure 7: Encoder-Decoder technique in seq2seq approach to predict answer for a question
 Source: Modified from <https://medium.com/botsupply/generative-model-chatbots-e422ab08461e>

Stack-Exchange is a set of community-based question answering websites, with each website covering a specific topic. Stack-Overflow deals with programming and relies on self-moderation. Figure 8 shows an example question-answering page of Stack-Overflow. Stack-Exchange provides an anonymized data dump of all the user-contributed content. The author had taken 1,354 question-answer pairs tagged as “java” and that are related to the programming concept covered by the chatbot. The author had used data dump published in Dec, 2017. Figure 9 shows the steps gone through by the learners when interacting with the chatbot that has machine learning capability.

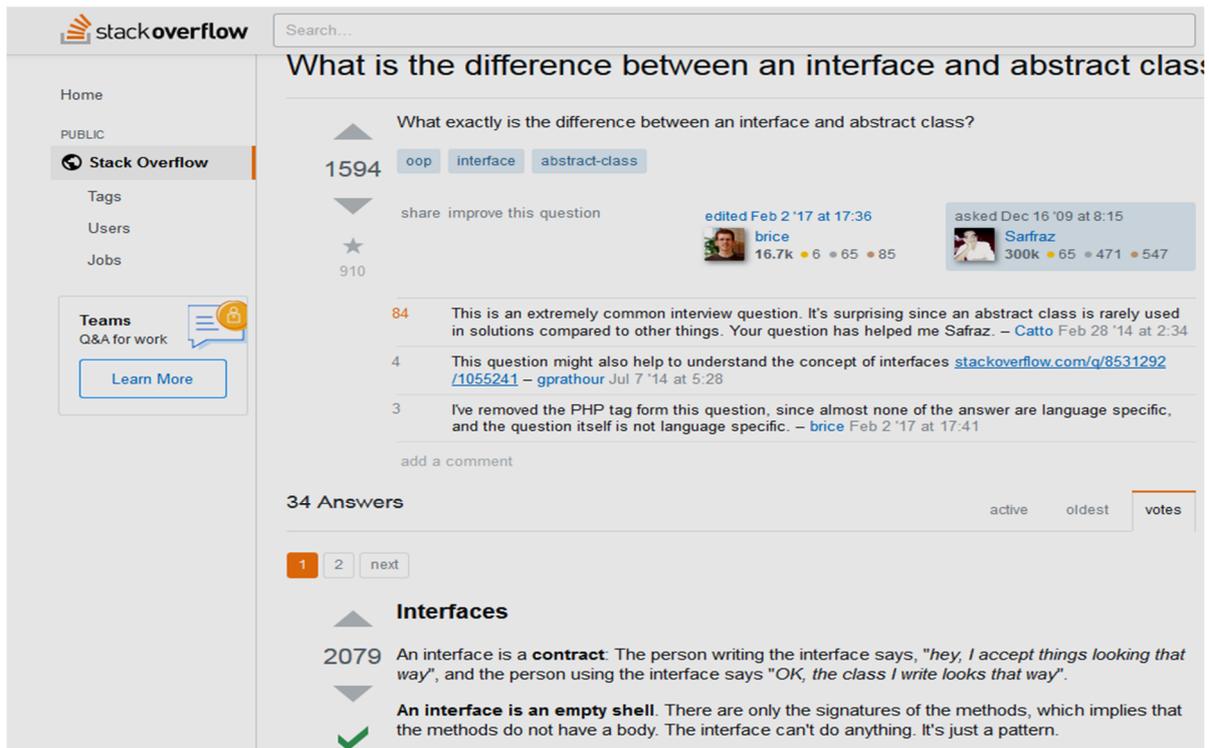


Figure 8: Example of question in Stack-Overflow
 Source: <https://stackoverflow.com/questions/1913098/what-is-the-difference-between-an-interface-and-abstract-class>

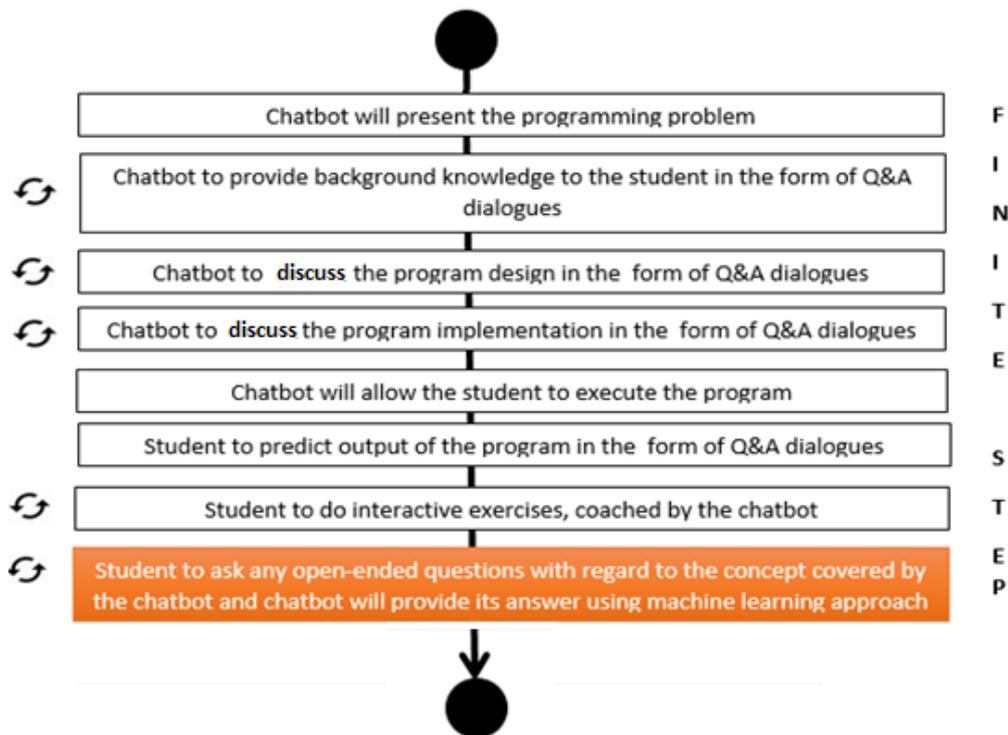


Figure 9: Steps gone through by the learners when interacting with the chatbot that has machine learning capability

Pedagogical Principles of the Chatbot

TWO main underlying pedagogical principles adopted by the chatbot are problem-based learning and active learning. Problem-based learning (PBL) is a student-centered approach in which students learn about a subject to solve an open-ended problem (Wood, 2003). The chatbots developed provides students with the opportunity to develop their PBL skills through:

- Self-awareness and evaluation of the learning processes
- Working independently
- Critical thinking and analysis
- Explaining concepts
- Self-directed learning
- Problem solving that are engaging & stimulating

Active learning is generally defined as any instructional method that engages students in the learning process (Revans, 2011). In short, active learning requires students to do meaningful learning activities and think about what they are doing (Prince, 2004). The chatbots are embedded with the interactive exercises that allow the students to practice skills. This include completion of problem solving exercise and the chatbots give and discuss the correct answers. The chatbots also use questioning strategies in which the students will be asked questions that are related to the concepts covered in order to put them in the proper context.

CHATBOT IMPLEMENTATION

As indicated in the previous section, SEVEN chatbots had been developed for the course CBOP3203 (Java Programming). CBOP3203 is an undergraduate course with 3 credits (120 learning hours) and it is compulsory for all students taking Bachelor of Information Technology at OUM. The course has learning outcomes (LO) as stated in Table 1.

Table 1: Learning Outcomes of CBOP3203

LEARNING OUTCOME (LO)	LO Domains
LO1: Explain basic constructs of Java	Knowledge
LO2: Develop Java programs using basic programming constructs	Scientific Methods, Critical Thinking and Problem Solving Skills
LO3: Develop Java programs using object-oriented approach	
LO4: Develop GUI-based programs using Java	

The SEVEN chatbots that been developed support **LO2** and **LO3** of the subject. The details of each of these chatbots are given in Table 2.

Table 2: Details for Each of the Seven Chatbots

Application	Programming Concept Covered	LO	Skills	Expected Learning Time via the Chatbot
Chatbot I	Basic Constructs of Java	LO2	Cognitive	1.5 hours
Chatbot II	if-else selection structure	LO2	Cognitive	2.0 hours
Chatbot III	for-loop	LO2	Cognitive	1.5 hours
Chatbot IV	while-loop	LO2	Cognitive	1.5 hours
Chatbot V	Array	LO2	Cognitive	1.5 hours
Chatbot VI	Writing class programs	LO3	Cognitive	1.7 hours
Chatbot VII	Creating objects	LO3	Cognitive	1.5 hours

The seven chatbots are related to each other as a problem covered by a chatbot is an extension of the problem discussed earlier by the predecessor chatbot. This will ensure the students to establish correct analogies with past problems and eventually transfer the prior knowledge to the new problems.

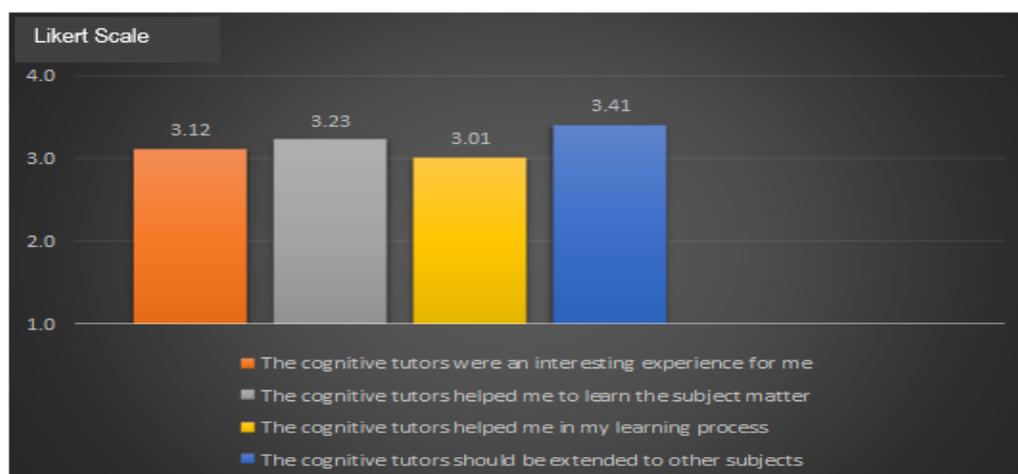
Technologies used to develop this application are Java, Servlet (server-based Java) and HTML5. These chatbots are stand-alone application connected to the Internet. Machine learning module was developed using Python and linked with the chatbot. The chatbots are made available through university's learning management system which uses Moodle.

THE EFFECT OF CHATBOT ON THE STUDENTS' LEARNING

A pilot study was conducted in order to determine the effect of these CTs on the students. Its procedures and results are elaborated below.

Students' Perception of the Chatbots

A survey was conducted to determine the students' perceptions of these chatbots at the end of the May-18 semester. The survey has four questions. A total of 32 students (70% of the overall students who took this course in May-18 semester) had participated in this survey. The mean scores of all the FOUR items in the questionnaire are shown below. The result shows that the learners gave good responses to all the items mentioned in the Figure 10.



1: Strongly disagree
4: Strongly agree

Figure 10: Students' perceptions of the chatbots

Effect on Learning

Before using the Chatbot I, students been asked to take a pretest prior to engaging with this chatbot. And then, they were given access to the chatbot (*students would not be given access to this chatbot if they are yet to attempt the pretest*). Finally, these students were asked to attempt the posttest questions. Pretest and posttest questions are the same and used to measure to which extent the students had improved in understanding the particular concept covered by the chatbot. The maximum score is 10 for each of these tests and the format is multiple-choice questions (MCQ). Seven students had attempted the pretest and six students had attempted the posttest. The results are given in Figure 11. The posttest average score was higher than the pretest. Thus, the students' engagement with the chatbot had resulted in good understanding of the concept covered by the chatbot.

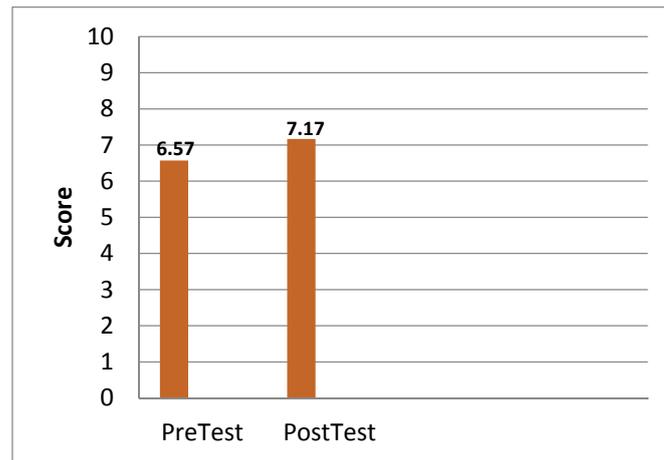


Figure 11: Students' pretest and posttest scores before and after interacting with Chatbot I

CONCLUSION

This paper has proposed seven unique chatbots in order to support the teaching and learning of programming. Unlike other chatbots that are plainly text-based conversation, the chatbots proposed in this paper are enriched with immersive and machine learning capabilities in order to make teaching and learning of programming more engaging and effective through problem-solving activities. Human tutoring is an extremely effective and enjoyable way to learn. But, buying one computer per student is a lot more cost effective than hiring a teacher for every student. A computer program such as the chatbots that had developed in this study able to bring a centralised expert to the students in an engaging and interactive manners irrespective of the geographical boundaries.

As a future work, the author plans to extend the machine learning capabilities to all the chatbot and to increase the accuracy of the “answers” provided by the chatbot through the machine learning technique. This will be done by training the machine learning program with at least 3000 question-answer pairs in order to strengthened the question-answering facility by the chatbot.

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THE EFFECT OF COLLABORATIVE LEARNING METHOD ON LEARNING STYLES OF ALLIED HEALTH STUDENTS

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ABSTRACT

Collaborative learning is an educational approach which involves groups of students getting together in learning. This student-centric approach could affect individual learning styles over a period of time. This study is to determine the effects of collaborative learning on the learning styles of allied health students. A descriptive longitudinal study was conducted among allied healthcare trainees in Sri Lanka, comprising students from Nursing, Physiotherapy & Bio-medical programmes. A sample of sixty (60) student's learning styles were assessed by using Gardner's theory of multiple intelligence, with a study duration of three years, analysing their changing of learning styles. This was performed at intervals at the admission, two, eighteen and 36 months respectively of their programme duration. A post-survey focused group discussion was held using 3 students from each stream, to evaluate the students' perception on the possible reasons for the results. Learning styles were scored out of 12 for each time slot of 0, 2, 18 and 36 months. Out of the 8 styles, the linguistic, logical/mathematical, visual/spatial and Body/physical styles have somewhat increased in all the stages compared during the admission stage. The inter-personal style however has shown a statistically significant ($P < 0.05$) increase after 18 and 36 months of collaborative learning. However, the level of musical and intra-personal skill has not changed over the time. Collaborative learning promotes interpersonal learning which is an essential component needed for the continuous development of health care professionals.

Keywords: *Collaborative Learning, Learning styles*

INTRODUCTION

Collaborative learning is a contemporary learning method which allows students to work in groups and to learn or to achieve a given task. Collaborative teaching and learning strategy have received a significant attention in the education sector in recent years. The particular learning method involve group of students getting together in which they share their skills and knowledge among each other. Hence, students with different levels in their academic performances support each other to achieve a given task (Gokhale, 1995).

In addition, it has been identified that students have different learning styles that they prefer to use to gain knowledge or information. Therefore, recently the educationists have started to pay their attention towards identifying the student profiles in terms of their level of learning styles to make the learning and teaching strategies effective.

LITERATURE REVIEW

Recent studies have proven the wide spread of different learning styles among students. A study done by Lujan and Dicarolo in 2006, has given evidences on medical students' preferences on multiple learning styles when receiving information. The results of the particular study have depicted that minority of students use a single learning styles while majority uses various learning styles such as visual, auditory, linguistics etc. Moreover, the authors of the paper have highlighted the necessity of moving towards contemporary learning styles over traditional teaching strategies. In addition, Abante and colleagues in 2014 also have shown the multiple learning styles that Engineering students possesses. As per their study majority of the students are visual learners and there are considerable number of students also have shown their auditory capacity.

Due to the presence of this wide spread learning capacity it is interesting to identify the effect of learning styles on the performance of students. The paper published by Gokhale in 2013 has showed that the level of learning styles is a factor that determines academic success. Hence the researcher has made recommendations on the importance of designing learning strategies to approach all levels of learning styles to make the learning and teaching strategies effective.

The collaborative teaching and learning strategies have become widely researched area among educationists. The particular teaching technique possess many advantages such as the opportunity to share idea, to engage in discussions, being responsible on their own learning and increased critical thinking ability. (Totten et al, 1995). It has been also proven that working in small groups has the capability of increasing students' interest on studies as well as in stimulating their critical thinking ability (Gokhale, 1995). In addition, Johnson and Johnson (1995) has stated that collaborative learning leads to higher levels of thoughts and increased memory than studying individually.

However, the studies on factors affecting learning styles and the relationship between collaborative learning and other variables are minimum. In addition, Gokhale in 1995 has highlighted the necessity of investigating the relationship between the effectiveness of collaborative learning vs other variables which include learning styles.

Hence, this study was conducted with the aim of to study the effect of collaborative learning on the learning styles of allied health Science students.

METHODOLOGY

A descriptive cross-sectional quantitative study was done using full time students at international institute of Health Sciences belonging to all disciplines of Allied Health who has completed more than a year of completion of the program. Inclusion criteria was the students enrolled in 03year program and student enrolled in programs with a duration of 3 years were excluded from the study.

A sample of sixty (60) students was randomly selected from the registration list and their learning styles were assessed by using Gardner's theory of multiple intelligence, with a study duration of three years, analyzing their changing of learning styles. This was performed at intervals at the admission, two, eighteen and 36 months respectively of their program duration.

The data were statistically analysed using SPSS software version 22.

A post-survey focused group discussion was held using 3 students from each stream, to evaluate the students' perception on the possible reasons for the results. Learning styles were scored out of 12 for each time slot of 0,2,18 and 36 months.

FINDINGS AND DISCUSSION

Out of the 8 styles, the linguistic (Scores: 10, 11, 11, 11) has showed a slight increment in all the stages compared to the admission stage (Figure 01). However, statistical analysis showed that the increment is not significant ($P < 0.05$).

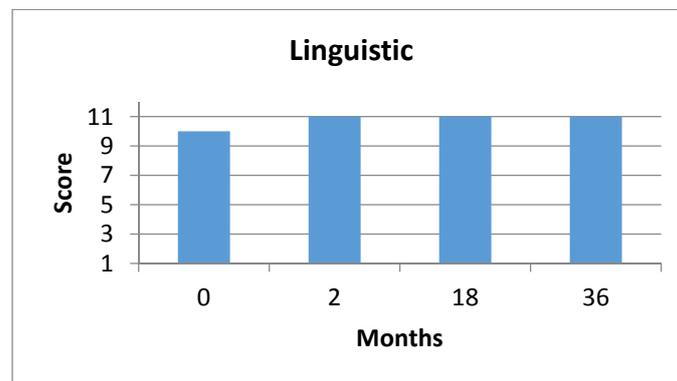


Figure 01: The variation of the mean score of the linguistic learning style over 36 months

Similarly, visual/spatial (Scores: 11, 11, 11, 12) (Figure 02), Mathematical (Scores: 10, 10, 11, 11) (Figure 03) and Body/physical (Scores: 11, 10, 12, 12) (Figure 04) styles have also shown a small increment stages compared that of admission stage.

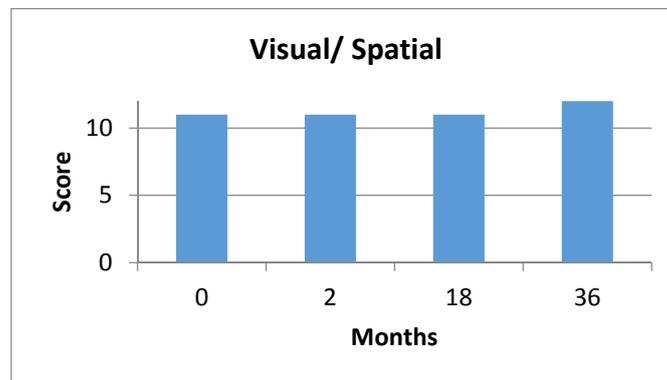


Figure 02: The variation of the mean score of the visual/spatial learning style over 36 months

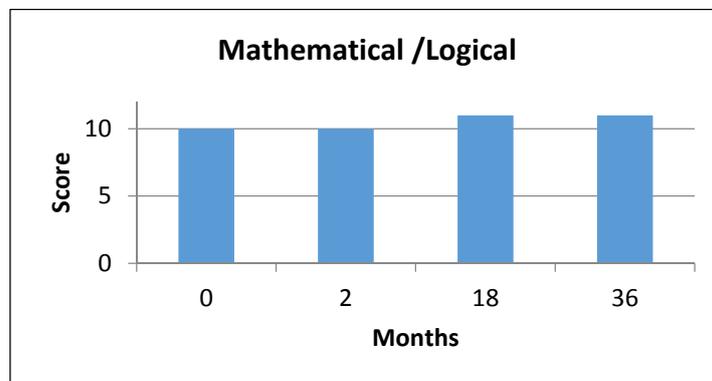


Figure 03: The variation of the mean score of the Mathematical/Logical learning style over 36 months

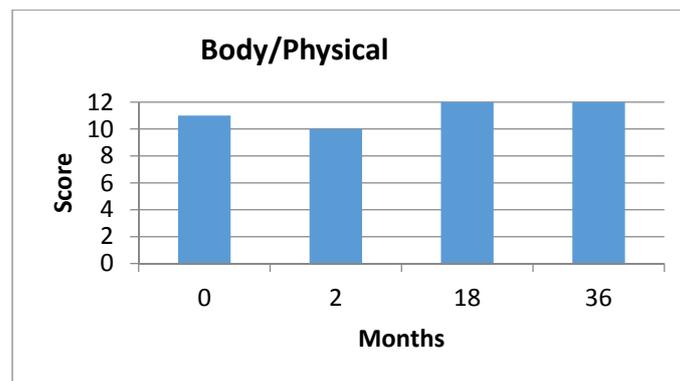


Figure 04: The variation of the mean score of the Body/Physical learning style over 36 months

Nevertheless, the inter-personal style (Scores: 9, 10, 12, 12) has shown a statistically significant ($P < 0.05$) increment after 18 and 36 months of collaborative learning compared to the admission stage and two months stage (Figure 05).

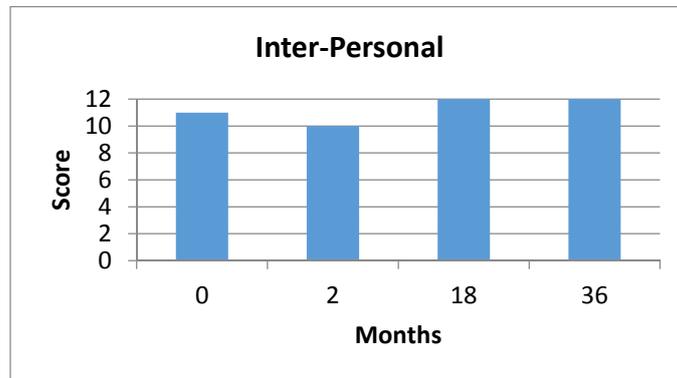


Figure 05: The variation of the mean score of the inter-personal learning style over 36 months

However, the level of musical and intra-personal skill has not changed over the time (Figure 06 and Figure 07).

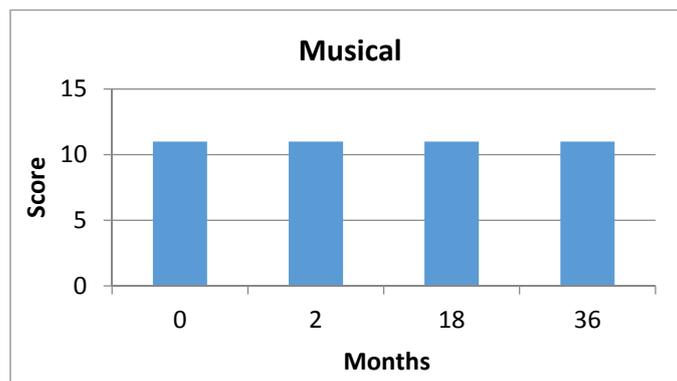


Figure 06: The variation of the mean score of the linguistic learning style over 36 months

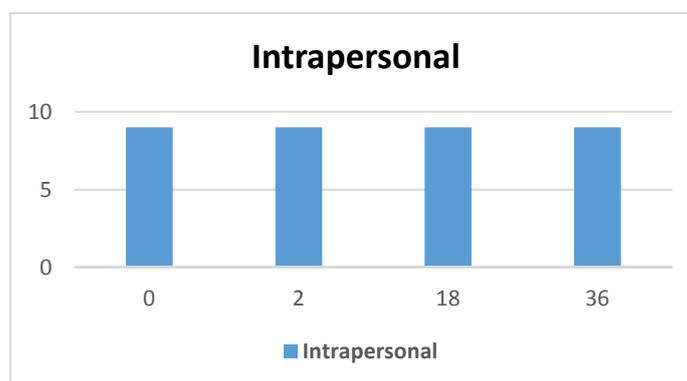


Figure 07: The variation of the mean score of the linguistic learning style over 36 months

The focused group discussion revealed the positive attitude of students towards collaborative learning methods. The students have a very good perception on student centric learning environment which allows a student to teach another student. In addition, the students from all three disciplines stated that they are highly satisfied with the Learner Management System based on collaborative activities, reflections in which they could share their clinical experiences and other group projects.

DISCUSSION

Learning styles is the variations in students' capability to gather and assimilate information. The learning environment is one of the factors which can affect the learning styles of students. A study done by Abante and colleagues in 2014, has already shown that the learning environment has an effect on the level learning styles of students. However, there are no studies available which describes the relationship between the modes of teaching and the levels of learning styles.

Collaborative learning which also can be named as cooperative learning or small group learning; has been subjected to different studies in education sector. Similar to our study, many research findings justify that students have a positive attitude towards the collaborative techniques (Gleesson *et al.* 2007 and Waugh & Jian Su, 2016).

The results of our study have shown that the students have a wide range of learning styles and the level has remained same or has increased over 36 months. During the 36 months of the study period they are continuously exposed to a contemporary teaching and learning environment and students have shown a positive attitude of students towards collaborative learning. This may have resulted in the major findings of this study.

CONCLUSION

Collaborative learning promotes interpersonal learning which is an essential component needed for the continuous development of health care professionals. And many students have shown a wide spread in their learning styles at the end of three years. These most likely since they have studied at IIHS and has been exposed to the collaborative learning methods which may have expanded their learning styles. Having good spread of learning styles allow the lecturer to deliver the programmes in more diversified way by using many delivery methodologies. This should be followed at assessments as well. It is recommended to validate students learning styles soon after AL studies to compare the change learning styles during respective educational programme.

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THE IMPACT OF LEARNER PROFILING ON SOCIAL SKILLS

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ABSTRACT

The purpose of this study is to describe the use of personality traits dimensions to predict skills. This paper focuses on the social competency dimension. The study also explored some basic questions about why learners learn, what are their main barriers and what are the expected rewards. Two intake groups were used in this study: 1041 September 2017 learners and 278 May 2016 intake students. May 2016 intake students are in their 4th semester during September 2017. An online instrument was developed based on literatures. The findings indicated that the top reasons for students to study were to obtain higher qualification (39.1%), personal growth (25.5%) and career advancement (23.3%). The findings also confirmed that work and family situation is the main barrier in adult students learning. All dimensions which include the big five personality traits, self-efficacy, self-directedness, attitude towards education and motivation towards achievement show significant correlation to the social competency.

Keywords: Learner Profiling, Personality Traits, Self-efficacy, Online Evaluation Tool, Social Skill

INTRODUCTION

Open University Malaysia (OUM) is the premier private open and distance learning (ODL) institution in Malaysia. It was established on 10 August 2000 to promote lifelong learning. Its aim is to increase knowledge-workers as a strategic move towards becoming a developed nation. As an ODL institution, OUM has a learner population who are largely working adults with diverse capacity and multifaceted challenges. Therefore, OUM established a vision towards becoming the leading provider of flexible learning in the country. Its mission is to widen access to quality education and provide lifelong learning opportunities by leveraging on technology, adopting flexible mode of learning, and providing a conducive and engaging learning environment at competitive and affordable cost. In widening access to education, OUM became the first private higher education institution to implement 'open entry' and currently operates as an Accreditation of Prior Learning (APEL) Assessment Centre. OUM is committed to its mission to provide quality education by ensuring that all its programmes are designed in line with the national quality assurance framework (the Malaysian Qualification Framework or MQF) that is governed by the Malaysian Qualifications Agency (MQA). OUM through its Learning

Technology Unit further enhances lifelong learning opportunities by leveraging on technology by expanding the adoption of flexible mode of learning to provide a conducive and engaging learning environment. Given this scenario, OUM is faced by a need to create a unique balance between operating as a private institution and creating learning opportunities for all. The university continues to seek and develop innovative strategies to meet its challenges.

Today, ODL institutions are almost synonymous with online learning providers; better known as open universities. Online learning environment affords a much more flexible learning environment that is a better fit for the demands of an adult learner. Nevertheless, the extent of ‘openness’ in education institutions is unique to its environment and socio-economic conditions. For OUM, a shift towards an environment that is predominantly supported by online learning is a natural move. Any adult returning to the education world will need to adapt to a new learning environment whether it is online or conventional. As such efforts are needed to increase our understanding of ODL learners. Continuous effort towards improving the curriculum to support successful development of self-directed and resilient learners who can successfully acquire the targeted programme outcomes amidst various life demands is crucial. This study reports OUM’s continuous effort in understanding its learners better, and in supporting their learning efforts for successful completion of the programme they have enrolled in.

LITERATURE REVIEW

Certain traits and characteristics have shown to have positive influence in the productivity of a person. One of the widely used model in identifying personality dimensions of human being is the 1985 Big Five Personality Traits by psychologists, Costa and McCrae (1987) is referred in this study. Rothmann and Coetzer (2003) reported the relationship between the Big Five Personality Traits and Job Performance. In addition to commercial adoption of the model by companies, studies have shown how the five dimensions introduced in the model can be used to predict several dimensions from academic performance, job performance to life satisfaction (Lounsbury, Saudargas, Gibson and Leong, 2005). The five dimensions described by Costa and McCrae (1987) are: Openness to Experience, Conscientiousness, Extraversion, Agreeableness, and Neurotism. According to Costa and McCrae (1992), the representation of basic dimensions of personality using the five factors were carried out based on four lines of reasoning and evidence. The work by McCrae and Costa (2004) shows the relevance of the dimensions today while the items are improved or amended to suit the need of the study.

In addition to the dimensions derived from the big five model, the study would need to explore additional dimensions that could serve as important indicators for the performance of an adult learner. According to Zimmerman (2000), decades of research have validated self-efficacy as a predictor in learners’ motivation and learning. The study also provided the reasoning for inclusion of self-efficacy as dimension despite its correlation to other factors such as motivation. The study also explored the connection to self-regulated learning. Self-regulated learning or self-directed learning is a facet of autonomous learning (Ponton and Rhea, 2006). This facet is found to be associated with the personality trait Conscientiousness (Rothmann and Coetzer, 2003). Nevertheless, there is a necessity to explore this facet as an additional dimension within the education environment of an adult learner. According to Cercone (2008), adult learners are autonomous, independent, self-reliant and self-directed toward goals. Autonomous learners are learners who are independent in their learning process. They possess the motivation and the critical intelligence required for independent acquisition of knowledge and skills.

Finally, this study also incorporates two additional dimensions: attitude and motivation. Learners’ behaviour and attitude are a reflection of the learner’s motivation and belief. Attitude refers to the individuals’ positive or negative assessments on targeted subject (Kallas, 2019). Attitude is defined as a learned predisposition to respond in a certain manner with respect to certain objectivity such as work or learning. The word learned here suggests that attitude can change. Attitude has three components: Cognitive, Affective and Behaviour. Actual behaviour of a person may or may not be aligned with the

attitude they behave concerning a subject. Behaviour can also be influenced by motivation. Motivation refers to the need to act towards an objective, which act as an indicator of how hard individual is willing to try to behave in a specific manner to achieve the objective (Lanero et al., 2011). Motivation in an individual can originate from various kinds of needs including achievement, power and affiliation. The needs for achievement and power are forms of intrinsic motivations, while the need for affiliation is a form of extrinsic motivation. Need for Achievement as theorised by Atkinson (1964) influences both performance and persistence of an individual in an endeavour; and is satisfied by an intrinsic sense of success and excellence. The need for power whether at a personal level or institutional is not directly related to learning. However, the need for power could be a source of motivation if the goal of learning is to gain career advancement.

A total of nine dimensions are explored in this study includes: Openness to Experience, Conscientiousness, Extraversion, Agreeableness, Neuroticism, Self-Efficacy, Self-Directedness, Attitudes towards Education, and Motivations towards Achievement. These dimensions are explored against a selected competency. Competency refers to the ability or the skill to do something successfully or effectively. At OUM, adult learners who successfully graduated from any programme accredited by MQA is expected to have acquired the programme learning outcomes outlined under eight specific domains: (i) Knowledge; (ii) Practical Skills; (iii) Social Skills and Responsibilities; (iv) Values, Attitude and Professionalism; (v) Communication, Leadership and Team Skills; (vi) Problem Solving and Scientific Skills; (vii) Information Management and Lifelong Learning Skills; and (viii) Managerial and Entrepreneurial Skills (MQA, 2010). Knowledge, practical skills, problem solving and scientific skills specific to type of the programme a learner is enrolled are measured using well-designed assessment methods in each course. Learners in the OUM programmes were also enrolled in generic courses: (i) Professional Ethics, (ii) Introduction to Communication (iii) Learning Skills for Open and Distance Learners, Basic Concept of Information Technology, (iv) Principles of Management, (v) Entrepreneurship, and (vi) Thinking Skills and Problem Solving. These courses are focused on the development of four of the domains: ((i) Values, Attitude and Professionalism; (ii) Communication, Leadership and Team skills; and (iii) Information Management and Lifelong Learning Skills; (iv) Managerial and Entrepreneurial Skills. In order to have a complete coverage of the measurement of the expected programme learning outcome, social skills and responsibilities facets must be considered. Responsibilities aspect is clearly identified as a facet under conscientiousness and is not a competency. Anyone who shows high degree of conscientiousness can also be considered to be highly responsible

This study describes the first phase of an online measure proposed for assessing the learner profiles and their influence on a selected competency. The specific objective of this study is to measure the extent of perceived personality traits and selected dimensions: Openness to Experience, Conscientiousness, Extraversion, Agreeableness, Neuroticism, Self-Efficacy, Self-Directedness, Attitudes towards Education, and Motivations towards Achievement, influences Social Competency.

METHODOLOGY

The research uses a survey instrument which was developed based on literature review of articles related to learner profiling. The questionnaire comprises of two parts: Part I and Part II. Part I consists 5 items: Learner's Identity Number, Cluster, Reasons, Barriers and Expected Outcomes associated with their study at OUM. The last three items are also supported by open-ended responses. Part II consists of 60 items grouped under ten dimensions/sub-constructs: Openness to Experience, Conscientiousness, Extraversion, Agreeableness, Neuroticism, Self-Efficacy, Self-Directedness, Attitudes towards Education, Motivations towards Achievement and Social competency. Learners were asked to respond to the items using a five-point Likert type scale, 1: Strongly disagree; 2: Disagree; 3: Neutral; 4: Agree; and 5: Strongly agree.

The survey was targeted to all first semester learners of the September 2017 intake (a population of 1919 learners) with a response rate of 70.3%. An announcement containing the link to the Survey Monkey URL was embedded on the Learning Skills for Open and Distance Learners course portal. The selected course is a compulsory course for all first semester learners. Learners were requested to fill up the survey questions. Data cleaning resulted in a total of 1,041 data (54.2%). Another group from the 162 cohort was also selected as respondents for the survey as this group was targeted for the preliminary stage of the study. Total clean responses received from this group was only 278 (12.5%) from its population. This group was included to examine changes in terms of their traits after studying at OUM for four semesters.

Data were analysed using the Statistical Package for Social Sciences (SPSS) Version 22. Descriptive statistics was used to determine whether or not the distribution of learners across the cluster is represented by the sample obtained. Learners' reasons for studying, learning barriers and their expectations in completing their studies are ranked to determine the primary factors. The Likert-scale measures under the studied dimension were also analysed using SPSS. The statistical analysis was extended to include the Pearson correlation.

RESULTS AND DISCUSSION

Clean data were obtained from 1,041 respondents (54.2% of the population) for this survey. The percentages represented by the learners from Cluster of Education and Social Sciences, Cluster of Business Management, and Cluster of Applied Science were 41.0%, 38.9% and 20.1%. These percentages were a reflective of the ratio of learners in among the clusters. The results presented focused on the findings concerning the main cohort as the findings observed for both cohorts are similar.

The findings highlighting primary reason, barriers and expected outcomes related to the respondents from Cohort 173 are depicted in Table 1, 2 and 3.

Table 1: Primary Reason for Studying at OUM as Selected by Respondents

RANK	Particulars	Percentage (%)
1	Obtain Higher Qualification	39.1
2	Personal Growth	25.5
3	Opportunities for Higher Position and Salary	23.3
4	Be a role model in the family	7.3
5	Others	4.8

Table 2: Barriers Faced by Respondents When Studying at OUM

RANK	Particulars	Percentage (%)
1	Work and/or Family Situations	39.5
2	Learning Skill	21.1
3	Financial Situation	15.6
4	Learning Behaviour	14.6
5	Others	9.2

Table 3: Rewards Expected by Respondents for Completing Their Studies at OUM

RANK	Particulars	Percentage (%)
1	Knowledge and Skills	60.2
2	Job Promotion or Salary Increment	21.3
3	Certificate	11.9
4	Others	6.6

The responses in Table 1 to 3 are also reflective of the positive attitude towards education depicted in Table 4. The attitude towards education construct shows a mean of 4.37 (the highest mean among all the dimensions). Table 4 also depicts the ranking of all nine traits/dimension. The measured competency is not ranked as it is not a personality trait. Similar ranking was also obtained for the 162 cohort. However, the value for Extraversion dimension must be read with caution as many of the items tested are not reflective of the construct based on the factor analysis results. The items will be improved further in the next cycle. OUM learners have shown higher level of motivation, openness to new experience, and conscientiousness. Hence, we can assume that the learners have high level of responsibilities. They have shown moderate level of Agreeableness and Self-directedness. The level of extraversion and self-efficacy are low. In this study the items for the Neurotism dimension are written in positive manner, hence it reflects the Emotional Stability of an individual. This dimension has the lowest score.

Table 4: Learner Profile: Personality Traits and Facets

Constructs	Cohort 173		Ranking
	Mean	Standard Deviation	
Openness to Experience	4.20	0.56	2
Conscientiousness	4.06	0.55	4
Extraversion	3.78	0.61	7
Agreeableness	3.86	0.60	5
Emotional Stability	3.44	0.69	9
Self-efficacy	3.72	0.71	8
Self-directness	3.89	0.61	5
Attitude Towards Education	4.37	0.58	1
Motivation Towards Achievement	4.13	0.61	3
Social Competency	3.96	0.62	N/A

An analysis of the correlation between the social competency dimension and all dimensions evaluated revealed that there is correlation between the social competency and all other factors. All items (n = 1041) showed *p*-values of 0.00 for confidence level less 0.05. However, the correlations found are not strong. Table 5 shows the highest Pearson Correlation values obtained between the items under the tested dimensions. Generally, the Pearson correlation values obtained were above 0.3, except for item 23 under the Agreeableness Dimension, and the items under the Emotional Stability dimension.

Table 5: Pearson Correlations Table

	Item Under Social Competency	Item Under the Tested Dimension	Pearson Correlation
Openness to Experience	60	3	0.445
Conscientiousness	59	12	0.458
Extraversion	56	18	0.539
Agreeableness	59	20	0.552
Emotional Stability	55	25	0.503
Self-efficacy	56	34	0.520
Self-directness	56	42	0.551
Attitude Towards Education	59	47	0.541
Motivation Towards Achievement	55	54	0.547

Table 6 shows a comparison between the data obtained from the Cohort 162 during their first semester (May 2016) to the data obtained during their 4th semester (September 2017). The comparison is limited to only four of the dimensions due to the difference in the dimensions studied. The mean values across four dimensions show an increase. The highest increase of 1.03 was observed for the dimension Motivation (Achievement), whereas all three other dimensions that could be compared shows an increment of around 0.7. The increase in the values in terms of motivation and attitude could indicate the positive experience that the learners have had during the first four semesters of their studies. The positive experience could be directly related to their academic performance. This has yet to be explored. The results also showed an increase in term of their traits, Openness to Experience and Conscientiousness. These could be attributed to the meaningful learning experience they have had during the first four semesters.

Table 6: Learner Profile: Personality Traits and Facets

Constructs	Sub-constructs	Cohort 162 (May 2016) (n = 217)		Cohort 162 (Sept 2017) (n = 278)	
		Mean	Standard Deviation	Mean	Standard Deviation
Big Five Traits	Openness to Experience	3.43	0.41	4.18	0.65
	Conscientiousness	3.30	0.41	4.05	0.62
Attitude towards Education		3.59	0.43	4.31	0.70
Motivation	Achievement	3.05	0.48	4.08	0.69

DISCUSSION

The findings discovered have a few significant relevance to the study of learner profiling. The responses from learners relating to the primary reasons for studying, learning barriers and expected leaning outcome support the high mean value obtained for the attitude towards education. The fact that 60% of learners expected knowledge and skills as their primary expected outcome of their learning programme proves that the learners have the right attitude towards learning. A significant number of learners (>20%) are concerned that their present learning skill is a barrier to their learning. This has two consequences. Such concerns among learners reflect their positive attitude towards their learning. Secondly, it identifies the learning support that is needed. Fortunately, OUM have always introduced a course (university's compulsory introductory course) on learning skills which is offered during every learner's first semester.

The lowest mean found for the emotional stability indicates the need and the importance of the e-counselling service that the university offers to its learners. While, the comparison made after four semesters of studying at OUM shows an increase in the mean values of selected dimensions, the university continue to seek ways to improve its curriculum. This is evident by the continuous effort to review the curriculum by the university. The findings from this study also indicate the need to improve learner's self-efficacy. The belief that a learner has about his learning ability would influence his motivation, attitude and learning behaviour. Zimmerman (2000) recognised self-efficacy as an essential motive to learn. He also highlighted the positive influence that self-efficacy have on learner's self-directedness. While, the learners indicated that they have a slightly higher (0.17 difference in mean), the 3.89 value is relatively low compared to other mean values. The diverse nature of adult learners would explain this finding and that in reality not all adult learners are self-directed. The development of self-directed learners has greater implication in achieving the true aim of education of shifting the responsibility of learning to the learner and therefore enabling the learner's capability for lifelong learning. Such learners are expected to self-regulate learning by having the self-discipline, self-initiatives and ability to assess individual academic progress aimed at achieving academic success and excellence. Strategies such as: (i) self-reflection, (ii) personalised learning goals, (iii) self-check, (iv) monitoring of learning process and progress, and others can be useful. Formative assessment that allows learners to assess their own progress and take necessary steps towards achieving their goals is emphasised. OUM has taken steps in this direction by introducing reflective writing as part of the assessment for selected courses. Existing strategies such as scaffolding could help to develop self-reliance and help the learner to become more self-directed (Cercione, 2008). Strategies such as short, directed and concrete tasks designed to enable "learning for the experience" that the learners could relate to (Fidishun, 2000) could also have important outcomes. There is a need to explore further into learning designs.

Ideally, selected programme learning outcomes could directly be linked to the traits. The conscientious trait was identified to have a strong positive influence on the facet of responsibilities (one of the MQA programme outcomes). Similarly, the trait openness to experience could have a positive influence on the expected programme outcomes such as Problem Solving and Scientific Skills. Meanwhile, conscientious traits could also have positive influence on expected programme outcomes such as values, attitude and professionalism, as well as managerial skills. A desired programme outcome could also have positive correlations with more than one personality trait. An example is the finding by McClelland (1976). McClelland indicated that achievement motivation is a characteristic found in people with entrepreneurial competency.

Social competency is a natural ability to learners who displayed traits such as extraversion and agreeableness. Such measure has yet to be verified since the current instrument requires minor improvement. Firstly, the extraversion dimension has to be improved, and there is a need to reduce the items under each construct to enable more concrete relations to be determined using the structural equation modelling.

CONCLUSION

This paper presented the findings of OUM learner's profile, in terms of the big five personality traits, attitude towards education and achievement oriented motivation. The study suggested that a majority of OUM's new learners were open to new experiences, conscientious, motivated and had positive attitude towards their education. These learners has found to good level of social competency. Learners also showed moderate level of Agreeableness and Self-directedness. Unfortunately, the level of extraversion, self-efficacy and emotional stability are lowest. The correlations found between social competency and all other factors suggest that it is possible to identify factors that are crucial in predicted competencies based of the expected programme outcomes. The aim is to create better understanding of how the university could provide the right support towards the achievement of the expected programme learning outcomes.

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SUB THEME 2: ASSESSMENT IN THE 21ST CENTURY



APPLICATION OF RASCH MODEL IN MEASURING THE QUALITY OF HEALTH AND WELLNESS FINAL EXAM QUESTIONS

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ABSTRACT

The assessment of the Health and Wellness module includes two components, 60% for the continuous examination and 40% for the final examination paper. In this paper we discussed the performance of students in the final examination paper which comprises 40 MCQs (MCQ). The 40 MCQ were constructed based on the Table of Test Specification developed by the subject matter experts at the faculty. The difficulty level of the questions was based on the 5:3:2 proportions. This ratio produces 20 MCQ at lower difficulty level, 12 MCQ at moderately difficult and 8 MCQ at higher difficulty. Results of 764 students were analysed based on their ability and item difficulty of the 40 MCQ using RaschWinsteps 4.01 software. Person Item Map Distribution (PIDM) showed that the item measure is between -3.62 to +4.97 logits and the person measure is between -1.28 to +4.09 logits. This finding indicated that while person ability exceeded item difficulty at the lower logit continuum of the Rasch model, at the upper logit continuum, some items are at higher difficulty level compared to students' ability. Item difficulty and separation indices statistics for both person and item are also of concern in this study. To ensure and enhance reliability and validity of the questions, it is highly recommended that the subject matter experts review the questions before applying it again in another exam or depositing it in the item bank system.

Keywords: *Assessment, Rasch Measurement Model, Item Bank, Item Difficulty, Student Ability*

INTRODUCTION

Test is an important tool in teaching and learning to determine the level of achievement and mastery of knowledge by the students. In addition, it can also be used to improve the quality of teaching and learning. Hence, student's assessment process should be taken seriously to achieve the programme learning outcomes and programme educational objectives.

MPU3313 Health & Wellness, a 3 credit-hour course, is one of the MPU courses offered by Open University Malaysia. This module consists of eight topics and the objectives of this module are to introduce the learners to the basic concepts of health and wellness, characteristics of a healthy lifestyle and personal responsibility to maintain health and wellness. This module helps learners to plan the strategies for emotional wellness, achieve spiritual support as well as recognise the importance of intellectual dimension in health and wellness. The course is delivered through a blended mode of teaching and learning as follows: (1) face to face; (2) online learning; and (3) self-managed learning.

For the final examination grades, MCQs are used to assess the achievement of the learning outcomes. A test using MCQs is an efficient and effective way to assess a wide range of knowledge, skills, abilities and attitudes (Haladyna et. al, 2002). The most important part of preparing multiple choice tests is to construct good questions. The real test of test designers is that the test provides a channel to justify students have achieved the required learning outcome. Test developers are not only required to master the content but also to have a good understanding of the objectives of the assessment, besides having good skills in writing the items (Anna Siri Michela Freddan, 2011).

For this study, Rasch analysis was used to review how well the MCQs were constructed for the Health and Wellness module using Rasch Model. Rasch analysis is a statistical technique used in education to measure abstract constructs (A. Obermeier, 2009). The purpose of this study is to enhance students' success with suitable sets of questions. An accurate method of analysis of the questions needs to be properly performed in order to construct questions suitable for students' level of thinking.

LITERATURE REVIEW

A common feature of all universities is to produce students who are successful and are able to practice what they have learned to be of assistance to their communities and country. Student achievement is a major concern for all educators, students, universities and other relevant parties. Students' understanding of a subject is the most important component of learning. Educators should provide a level of assessment to commensurate student's cognitive level.

A good examination is one method to measure students' performance. Typically, the MCQs consist of incomplete questions or statements, referred to as a stem, and a set of two or more options comprising the plausible answers to the question. The student's task is to choose an option that gives the best answer to the question posed. The best answer is referred to as the main choice and the rest are called distracters. Obviously only one option is correct. Developing MCQs is not an easy task. It becomes very complex to form distracters that fit their purpose. In fact, the appropriate quality of MCQ is based on the availability of distracters. A good distracter should be able to discriminate between the informed and the uninformed student. (Kennedy Q., et. al, 2017). Therefore, item analysis will be used to assess the quality of these MCQs.

However, in order to accomplish this task of producing a good quality test items substantial amount of time, effort, and energy is required. In addition to the capability in enhancing subject matter knowledge, teachers need to spend relentless hours for tests planning including the process of assembling items, writing, and determining the difficulty level of each item (Richichi, 1996; Ahmad Zamri, 2010). This perhaps serve as one the possible reasons to explain why most test items developed by teacher are considered fail to discriminate between high and low ability; and items are not function according to their intended used (Richichi, 1996). In addressing this pitfall, literature suggests that much of the burden of test construction can be reduced when a large collection of good quality of test items is available to either teachers or test developers (Millman & Arter, 1984).

A large collection of test items along with their measurement characteristics is termed as item bank or interchangeably recognized as item pools. Item bank is a notion that is widely defined, from a loose and unrestricted definition such as 'any collection of test questions' (Millman & Arter, 1984) to 'a

composition of coordinated questions that develop, define, and quantify a common theme and thus provide an operational definition of a variable' (Wright, 1984). On the other hand, in a more detail manner, Choppin (1981), Rudner (1998) refer item bank as a large collection of good test items for which their quality is analyzed and known, and which are systematically stored in a computer so that they are accessible to students and teachers for measuring their achievement or ability.

Intriguing, Rudner (1998) highlights the application of item bank, namely, item banking provides substantial savings of time and energy in developing test due to its convenience in depositing and storing items.

There are other two main reasons to explain the sufficient application of item bank. First, items in an item bank can be edited, withdrawn, and deposited (Rudner, 1998). Secondly, its capability to develop several test with the characteristics of flexibility, security, and consistency. The reasons mentioned convince item banking to be a useful tool for educational system to monitor educational achievement (MacCann & Stanley, 2009).

Considering what have been mentioned above, a well-developed item bank according to Educational Testing Service (1992) is only indicative through good quality of test items as listed below:

- (i) Items must be fair, valid and reliable in order to create fair, valid and reliable tests;
- (ii) A test is only as good as each item on it;
- (iii) If items don't really measure the standard, the test results will not be useful;
- (iv) Instructional decisions should be made on the basis of valid assessments;
- (v) Teachers need good data to make better use of their limited instructional time; and
- (vi) Older and repurposed items often do not address today's instructional standards.

As such, an item bank involves a thorough process of items filtering and calibrating before item storing (Wright & Bell, 1984) in developing good quality of items. Statistically, calibrating items means items require to be standardized for the purpose of precision. In other words, item bank should be developed and validated with accurate assessment in item level in order to produce a set of good quality items. Remarkably, a robust calibrated item bank that utilises Rasch Model provides numerous advantages to test developers such as flexibility, consistency, economy and security (Umar, 1999).

Advancement in using sophisticated computer software further enhances the possibilities of development of a calibrated item bank. Computer program such as WinSteps for test development and FastTest for item banking facilitates the development item bank where evaluation of each item and the formation of each test can be made with ease.

A variety area of studies have successfully developed and validated their test using Rasch Model. For example, Kazeem (1988) uses Rasch Model to construct achievement test while Abdel Fateh El Korashy (1995) utilizes Rasch Model to select items for mental test. Meanwhile, Barman and Boone (1997), Ludlow (2001) and Salzberger (2002) use Rasch Model to validate education tests while Heinemann et al. (1997) validate the measurement of stroke scale in medical research. The other significant empirical studies includes Baylor, Yorkston, Miller, and Amtmann (2009), Forkman, Boecker, Wirtz, Eberle, Westhofen, Schauerte, Mischke, and Norra (2009), Gothwal, Wright, Lamourex, and Pesudov (2009), Heinz, Smith, and Kassel, and (2009), as well as Muis, Winne, and Edwards (2009).

A well-constructed item bank enables teachers to design the best possible test for every purpose. Teachers can tailor each test to their immediate educational objectives and consider who is to be measured without losing contact with the common core of bank items. This is because it is not necessary for every student to take the same test in order to be able to compare results. Students can take the selections of bank items most appropriate to their levels of development. The number of items, their

level and range of difficulty, and their type and content can be determined for each student individually, without losing the comparability provided by standardized tests. Comparability is maintained because any test formed from bank items, on which a student manifests a valid pattern of performance, is automatically equated, through the calibration of its items onto the bank, to every other test that has been or might be so formed.

This study is an important step in creating OUM's item bank. However, additional analysis need to be carried out with other test booklets and test linking utilising common items in order to fit this purpose. Overall, it is important to realize that a well-planned and well-documented item bank is necessary for ensuring that the tests are fair, appropriate, reliable and valid. Rasch measurement model may contribute to this process.

Rasch Measurement Model

Rasch analysis is based on a stochastic or probabilistic model where Rasch measurement takes into account two parameters-tests namely the item difficulty and the person ability. These parameters are assumed interdependent. However, separation between the two parameters is also assumed. For example, the items (questions) within a test are hierarchically ordered in terms of their difficulty and concurrently, persons are hierarchically ordered in terms of their ability. The separation is achieved by using a probabilistic approach in which a person's raw score on a test is converted into a success-to-failure ratio and then into the logarithmic odds that the person will correctly answer the items. This is represented in a logit scale. When this is estimated for all persons, the logits can be plotted on one scale.

The items within the test can be treated in a similar manner by examining the proportion of items answered incorrectly and converting this ratio into the logarithmic odds of the item being incorrectly answered. A person's logit score can then be used as an estimate of that person's ability and the item logit score can then be used as an estimate of that item difficulty

$$P_{ni}(x_{ni} = 1 / B_n, D_i) = \frac{e^{(B_n - D_i)}}{1 + e^{(B_n - D_i)}}$$

ensuring the standards and objectives evaluation of student performance, item analysis is a process involved in assessing the quality and quantity of both items and tests as a whole through answers given by students (Anna Siri & Michela Freddano, 2011). The main purpose of item analysis is to improve the quality of the test by revising or eliminating ineffective items. It can provide diagnostic information about what students have learned and what they have not learned.

There are many different procedures for determining item analysis. The procedures used to assess the effectiveness of an item depend on the extent to which the researcher's priorities and for testing purposes. (K. Chellamani, 2013). In conclusion, item analysis is very meaningful when it comes to improving the teaching skills in the construction of tests items so that the questions can really measure the extent of the students' achievement in a subject.

Assessment is an important aspect of the teaching and learning process that aims to collect, interpret and analyze student performance. Quality of learning is determined by the quality of the assessment. Hence, using appropriate and quality assessment strategies enable students to be engaged in their own learning in a challenging but enabling environment. (Babar Khan, 2012)

Multiple-choice testing is easy to score and reduce the reliance on skills of writing and self-expression and become a great help for those students who have language problem. In addition, student may spend less time studying for the test (Kulhavey, Dyer, & Silver, 1975), and they take notes on different material compared to students expecting an essay exam (Rickards & Friedman, 1978) as cited in Henry L. Roediger III (2005).

In preparing the single best option type of multiple-choice questions (MCQs), it is recommended to write the options first. The possible options generated must be homogeneous based on the selected topic and context. The options should be readily understood and as short as possible. A good distracter should be inferior to the correct answer but should also be plausible to a non-competent candidate. Beside that a question stem is to be written with lead-in statement based on the selected correct option. The well-constructed MCQs should test the application of the context rather than just the recall of information so that it will enhance the problem solving ability. Quality MCQs must be free from any tricks and clues. (Mohammed O. Al-Rukban, 2006)

There are two major types of technical flaws that are commonly introduced by question writers namely; (1) flaws related to irrelevant difficulty - avoid things that may cause examinees to select an incorrect response; and (2) flaws related to examinees' test wishes - avoid responses that may help examinees select the correct answer.

The list of questions that can be used to guide the test developers in constructing good MCQs (Alfred Tenore, 2015) are shown in Table 1.

Table 1: Guide for MCQ Test Developers

Item	Stem	Lead-in	Option
<ul style="list-style-type: none"> • Has a single-best answer format been used? • Does it test application of knowledge rather than recall of isolated facts? • Does it satisfy the "cover test" rule? • Is it appropriately "balanced" (most of reading in stem & relatively short options)? 	<ul style="list-style-type: none"> • Is the stem structured as a vignette, describing a specific situation? 	<ul style="list-style-type: none"> • Is it phrased positively rather than negatively? • Does the phrasing avoid making the vignette irrelevant? • Is it focused so that it poses a clear question to be solved? • Is it structured as a complete sentence ending with a question mark? 	<ul style="list-style-type: none"> • Are they homogeneous in content and phrasing? • Are they similar in length and parallel in structure? • Does each follow the lead-in both grammatically and logically? • Can they be rank-ordered on a single dimension (from most to least correct)? • Does the correct answer avoid repeating words used in the stem ("clang" clue)? • Are distracters phrased to avoid repetition that clues correct answer (convergence)? • Has the option-set been constructed to avoid "none of the above" "all of the above"? • Does each avoid the use of absolute terms (e.g. "always", "never")?

METHODOLOGY

This course is offered to 764 students in the January semester 2018. At the end of the semester, after twelve weeks of studying, they sat for the final examination in Health and Wellness. The study was conducted using the quantitative research approach and the following are the steps involved in the development of the final test items.

Step 1 – Development of the Test Specification Table

The Test Specification Table was the first thing to be done before developing the items. This is a blue print to ensure that the items are equally distributed based on the difficulty level and student learning time. The purpose of this step is to state the content by topics and the number of student learning time (SLT) for each topic. At this stage the learning outcome is aligned to the content as shown in Table 2.



Step 2 – Instrument Development and Validation

The instrument is in the form of a test consisting of 40 multiple choice items with four options A, B, C, and D. The items in the test cover the eight topics of the Health and Wellness module. The test items were self developed by the internal academicians.



Step 3 – Item Development

The test developer is a lecturer at the university and has teaching experience for the Health and Wellness course. The items were developed using both English and Malay languages using backward translation from English language to Malay Language. The test items were developed based on the level of difficulty with the following criterion: Low, Intermediate, and High. Criterion Low includes Knowledge and Comprehension; Intermediate encompasses Application and Analysis and High covers Synthesis and Evaluation.

Item content validation was conducted to ensure the items measure a specific learning outcome (Anastasi 1988). The validation and moderation was done at the faculty by another lecturer who is also the content expert of this course.

The final test paper was distributed during the examination day to all students sitting for this course. Students are allowed 1 1/2 hours to complete the 40 MCQs.



Step 4 – Test and Item Calibration Design

This study employs the Rasch Model software namely WINSTEPS 4.01 to model both students' ability and item difficulty.

The Rasch Model provides two infit statistics: infit and outfit Mean Square Statistics (MNSQ). The infit MNSQ is sensitive to unexpected responses to items near the person ability level and the outfit MNSQ is outlier sensitive. Mean square fit statistics are defined such that the model-specified uniform value of randomness is 1.0 (Wright & Stone, 1979). Person fit indicates the extent to which the person's performance is consistent with the way the items are used by the other respondents. Item fit indicates the extent to which the use of a particular item is consistent with the way the sample respondents have responded to the other items.

Rasch analysis provides reliability indices for both item and examinee's measure. For this analysis, values between 0.70 and 1.30 logits are considered acceptable (Bond & Fox, 2001). High reliability for both indices are desirable since they indicate a good replication if comparable items/examinees are employed.

Table 2: Mapping of Items to Learning Outcomes Based on Learning Domains for Health and Wellness

	Topics Learning Outcomes	Levels of Taxonomy					Total	%*	
		Knowledge	Comprehension	Application	Analysis	Synthesis			Evaluation
		50% (20 Qs)		30% (12 Qs)		20% (8 Qs)			
1	Concept of Health & Wellness								
1.1	Describe the characteristics of healthy lifestyle		1		1				
1.2	Identify personal responsibilities	1					1		
1.3	identify factors characteristics of health & wellness			1				5	
								12.5	
2	Dimensions of Health & Wellness								
2.1	plan physical activities that will contribute to PW		1						
2.2	Select strategies for balanced emotional wellness	1		1					
2.3	Employ spiritual support to enhance wellness		1						
2.4	Evaluate the significant of intellectual dimension				1			5	
								12.5	
3	Dimensions of health & wellness II								
3.1	discuss strategies to enhance social wellness						1		
3.2	Evaluate factors that contribute to occupational wellness		1		1				
3.3	Discuss strategies to promote environmental wellness	1		1					
3.4	Interpret financial wellness		1					6	
								15	
4	Understanding Nutrition and Diet								
4.1	Identify the component of healthy diet	1							
4.2	distinguish the dietary challenges for specific		1			1			
4.3	Compare healthy diet with therapeutic diet			1					
4.4	Plan for healthy diet		1		1			6	
								15	
5	Maintaining weight								
5.1	Explain the concept of weight management		1						
5.2	Identify the causes of obesity					1			
5.3	Differentiate the two types of eating disorders	1		1					
5.4	Plan weight management therapy		1					5	
								12.5	
6	Preventing Diseases								
6.1	Discuss the importance of disease prevention		1						
6.2	Discuss the risk factors, signs and symptoms of CVD					1			
6.3	Elaborate the types, risk factors and S & S of cancer	1		1					
6.4	Discuss the causes and risk factors for diabetes mellitus		1				1	6	
								15	
7	Financial health & Wellness								
7.1	Differentiate financial health and financial wellness			1					
7.2	Identify the challenges confronting emerging dult in FW	1							
7.3	Discuss the elements of financial wellness					1			
7.4	Construct a financial fitness plan		1					4	
								10	
8	Medical and Health Insurance								
8.1	Describe the different types of life insurance		1						
8.2	Explain the fundamental of insurance				1				
8.3	Select the appropriate medical and health insurance to suit the needs of the insured					1			
							1	3	
								7.5	
Sub-Total		7	13	7	5	5	3	40	
TOTAL		20		12		8		100	

FINDINGS AND DISCUSSION

Rasch model with the application of WINSTEPS 4.0.1, was used to analyse the data and to test the psychometric properties of the test in terms of validity and reliability of the instrument. This software enables the item difficulties to be ordered on the same linear scale along with the student measures of ability (Rasch, 1980).

The Person-Item Distribution Map (PIDM) details out the exact position of each student in relation to the respective item. Rasch Model tabulates the items (MCQ) on the right side and the persons are plotted on the left side of the map on the same logit scale which gives a precise overview on the student's achievement of each MCQ. This will give a clearer view of students' ability towards item difficulty.

In PIDM, item means, $Mean_{item}$ functions as a threshold value and it is set to zero on the logit scale. The higher the location of item from the $Mean_{item}$ the more difficult the item compared to an item on a lower location.

Similarly, with the person distribution, excellent students will be located at the top of the map while the low ability students will be placed at the bottom of the map. Therefore, the level of the person's ability can be identified from PIDM by looking at the separation between the person and item on the map. The bigger the separation means that the person is more likely to achieve the item.

The respondents' reliability index of 0.98 is a good value (Pallant, 2001) for the expected consistency on the logit scale for the answers on different sets of items that measure the same construct (Wright and Masters, 1982). Linacre (2007) stated that the reliability of respondents of ≥ 0.8 and respondents' separation index of ≥ 2.0 as good indices. The statistics generated by Rasch analysis estimate the degree of items suitability that measures latent variables, assuring the item-fit of the instrument are within an acceptable range.

Reliability and Separation Index

Table 3 shows the item reliability and separation index generated by Rasch analysis. The statistics shown indicate how Rasch model conform the item separation index and person separation index as well as the item reliability and person reliability.

The value of the item separation refers to the number of strata of item difficulties obtained in the questionnaire. As shown in Table 3 the value indicates that the items develop are well spread and the items are on the logits scale with high reliability. The value of the separation index for all respondents are align with the recommendations by Linacre (2005) which states that the separation value index of > 2.0 is good.

Table 3: Summary of Infit and Outfit MNSQ for Items and Persons

	TOTAL SCORE	COUNT	MEASURE	MODEL S.E.	INFIT MNSQ	ZSTD	OUTFIT MNSQ	ZSTD
MEAN	26.9	40.0	1.11	.41	1.00	.0	.99	.1
P.SD	3.6	.1	.62	.03	.18	1.0	.56	.8
S.SD	3.6	.1	.62	.03	.18	1.0	.56	.8
MAX.	38.0	40.0	4.09	.85	1.79	3.6	6.76	4.4
MIN.	12.0	39.0	-1.28	.39	.59	-2.7	.16	-1.5
REAL RMSE	.43	TRUE SD	.45	SEPARATION	1.04	Person RELIABILITY	.52	
MODEL RMSE	.42	TRUE SD	.46	SEPARATION	1.11	Person RELIABILITY	.55	
S.E. OF Person MEAN = .02								
Person RAW SCORE TO-MEASURE CORRELATION = .99								
CRONBACH ALPHA (KR-20) Person RAW SCORE "TEST" RELIABILITY = .52 SEM = 2.49								
SUMMARY OF 40 MEASURED Item								
	TOTAL SCORE	COUNT	MEASURE	MODEL S.E.	INFIT MNSQ	ZSTD	OUTFIT MNSQ	ZSTD
MEAN	513.6	763.8	.00	.12	1.00	.0	.99	-.1
P.SD	189.5	.4	1.71	.06	.05	1.8	.10	1.9
S.SD	191.9	.4	1.73	.06	.05	1.8	.10	1.9
MAX.	756.0	764.0	4.97	.36	1.11	3.7	1.23	3.5
MIN.	19.0	763.0	-3.62	.08	.89	-5.3	.78	-5.2
REAL RMSE	.13	TRUE SD	1.71	SEPARATION	12.83	Item RELIABILITY	.99	
MODEL RMSE	.13	TRUE SD	1.71	SEPARATION	12.89	Item RELIABILITY	.99	
S.E. OF Item MEAN = .27								

The value for student separation is 1.04 which is relatively poor. This small value indicates that there is not enough differentiation among students to separate them into distinct performance level or strata. The analysis identified two groups of students only; good and weak. This value can be increased by widening the students' ability. The person reliability value of 0.52 is considered to be poor. The item summary provides the value of Separation G = 12.83. This value indicates that the items were sufficiently well separated in terms of difficulty. However, although the value of item separation conforms to replicability of items to comparable sample of examinees, there are other concerns; which are the poor and weak values of person separation and person reliability.

Person Item Distribution Map

The PIDM shows that Q26 is the most difficult item for students to achieve while the easiest item is Q7. There is a small separation between Q7, Q27 and Q2. This shows that the level of difficulty of the items is fairly spread out as there are gaps as we go up the logit scale. The gaps should be closed by introducing more items at different levels of difficulty so that students' performance level can be divided equally. Figure 1 shows that the Person mean value, $Mean_{person}$ for this analysis is 1.11 logits which is higher than the threshold item value, $Mean_{item} = 0$.

A total of 456 students (59.7%) were found to be above the $Mean_{person}$ and the highest person managed to score 4.09 logit. The achievement of the students shows that only 59.7 % have managed to achieve the learning outcome of this module. In contrast, 308(40.3 %) were located below the $Mean_{person}$ value of 1.11 logits.

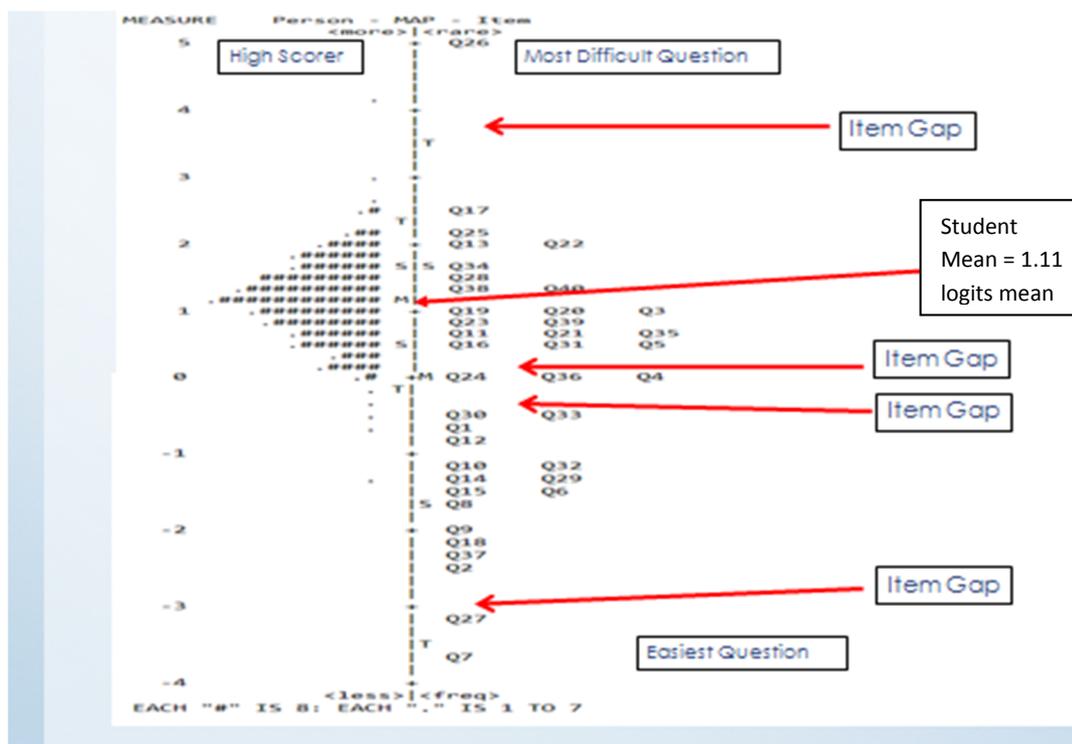


Figure 1: Person Item Distribution Map

For this exam paper, the item difficulties range from -3.62 logits to 4.97 logits. Students' mean value seems to be higher ($M = 1.11$ logits, $SD = 0.41$) when compared with item mean which is fix to 0.00 logits. The lowest score for person is -1.28 logits and it is higher than the lowest score for item which is -3.62 logits. There exists a separation gap of 2.34 logits. In this gap are eight items which are categorised as easy items and easily answered and passed by the lowest ability students.

The spread of the items can be calculated using the difference between Item Max and Item Min = 4.97-(-3.62) = 8.59 logit. Students will find more difficult to answer the question if the gap is wider. The largest gap is between Q26 and Q17. This means that item Q26 is a difficult question.

The distribution of persons based on their ability does not match with item difficulty. Items Q19, Q20 and Q3 are at the same difficulty level and measuring the same ability. Besides this example, Figure 1 shows other overlapping items which can be reduced and improved to show a good spread of difficulty level and also person separation.

It is also observed that the ordering of item difficulty in the test paper is not following the sequencing of items. In best practices, the items are spread out based on their difficulty levels, from easy items at the beginning of the test paper to more difficult items toward the end of the paper. However, Figure 1 shows that items Q30, Q33, Q36, Q37, Q27 and Q29 which are supposed to be developed as difficult questions to test higher ability students are located below the $Mean_{item} = 0.0$. In contrast, items Q3, Q5 and Q4 which are supposed to test lower order ability is located above the $Mean_{item} = 0.0$.

Item Fit and Misfit

Statistical analyses for suitability of items were carried out to identify items that should be greater than 0.6 and less than 1.4 (Bond & Fox 2007). First, the fit statistic was performed on the outfit MNSQ then to the infit MNSQ statistics (Bond & Fox 2007).

Table 4 shows the items based on the infit MNSQ and outfit MNSQ statistics. The analysis shows the infit MNSQ and outfit MNSQ values for all items and respondents. The infit MNSQ and outfit MNSQ value of each item and the respondents should be in the range of 0.60 to 1.40 (Bond & Fox 2007) while according to Wright & Linance (1992), the total mean square infit and outfit mean square of each item and respondent must be located within 0.6 to 1.5.

The infit MNSQ values ranges from 0.89 to 1.11 and the outfit MNSQ values ranges from 0.78 to 1.23. These values are within the acceptable range of fit statistics from 0.70 to 1.30 (Bond & Fox, 2001). This indicate that all items in the exam paper are working together to define the student ability in the Health and Wellness final exam paper.

Table 4: Infit and Outfit Statistics of the 40 Health and Wellness MCQ

ENTRY NUMBER	TOTAL SCORE	TOTAL COUNT	MEASURE	MODEL S. E.	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	PTMEASUR-CORR.	AL-EXP.	EXACT OBS%	MATCH EXP%	Item
26	19	764	4.97	.23	.99	.0	.92	-.2	.14	.11	97.5	97.5	Q26
17	163	763	2.52	.09	1.11	1.23	3.33	1.4	.18	.23	74.0	78.9	Q17
25	201	764	2.93	.09	1.05	1.1	1.07	1.3	.22	.23	74.4	74.4	Q25
13	243	764	1.93	.08	1.00	1.1	1.01	1.3	.22	.23	71.1	69.8	Q13
22	245	764	1.92	.08	1.02	.5	1.03	.7	.24	.27	68.2	69.6	Q22
34	298	763	1.59	.08	1.06	2.4	1.08	2.0	.18	.28	65.1	64.8	Q34
28	307	764	1.54	.08	1.03	1.1	1.03	1.0	.24	.28	62.8	64.3	Q28
38	332	764	1.39	.08	1.07	3.1	1.08	2.9	.17	.28	57.8	62.3	Q38
40	339	763	1.35	.08	1.05	2.4	1.06	2.2	.20	.28	57.9	62.4	Q40
19	391	763	1.05	.08	.99	1.7	.98	1.8	.30	.30	60.3	61.3	Q19
20	396	763	1.02	.08	.90	-5.3	.88	-5.2	.44	.28	68.9	61.4	Q20
39	428	764	.84	.08	1.08	3.7	1.09	3.5	.15	.28	56.5	62.3	Q39
23	443	764	.76	.08	1.04	1.8	1.04	1.3	.21	.27	62.2	62.9	Q23
35	452	764	.70	.08	.89	-4.9	.87	-4.5	.44	.27	70.5	63.5	Q35
21	461	764	.65	.08	1.07	2.9	1.08	2.5	.16	.27	59.9	64.0	Q21
11	471	764	.59	.08	.96	-1.7	.95	-1.7	.34	.27	66.8	64.7	Q11
16	476	764	.56	.08	.97	-1.9	.96	-1.9	.31	.27	64.8	65.1	Q16
31	490	764	.48	.08	.91	-3.3	.88	-3.6	.41	.27	69.9	66.2	Q31
5	496	763	.44	.08	.98	-3.6	.97	-3.8	.29	.26	68.2	66.8	Q5
24	551	764	.08	.08	1.00	.0	1.01	.2	.25	.22	73.2	72.5	Q24
4	553	764	.07	.08	.96	-1.9	.93	-2.1	.31	.22	73.7	72.8	Q4
36	557	764	.04	.08	.94	-1.7	.92	-1.9	.36	.22	72.4	73.1	Q36
33	616	764	-.43	.09	.99	1.2	.96	1.5	.24	.27	80.8	80.3	Q33
30	619	764	-.45	.09	1.07	1.2	1.20	2.6	.08	.22	80.8	81.1	Q30
12	641	764	-.66	.10	1.09	1.1	1.09	1.4	.22	.21	84.8	83.3	Q12
10	677	763	-1.09	.12	.99	1.1	.98	1.2	.20	.18	88.9	88.7	Q10
32	683	764	-1.16	.12	1.02	1.2	1.08	1.7	.13	.16	89.3	89.4	Q32
29	693	764	-1.31	.13	.97	1.2	.98	1.9	.22	.16	90.7	90.1	Q29
14	698	764	-1.36	.13	.96	1.2	.96	1.9	.22	.16	91.4	91.4	Q14
16	702	764	-1.47	.13	1.00	.0	1.02	1.1	.15	.16	91.9	91.9	Q16
15	707	764	-1.56	.14	.99	1.0	.94	1.1	.17	.15	92.5	92.5	Q15
8	716	764	-1.7	.15	.99	1.0	.94	1.1	.22	.15	93.3	93.3	Q8
18	731	764	-2.15	.18	1.00	.0	1.03	.2	.12	.12	95.7	95.7	Q18
37	737	764	-2.37	.20	1.01	.1	.92	.3	.10	.11	96.6	96.6	Q37
27	738	763	-2.44	.20	1.09	.0	1.06	.3	.10	.10	96.6	96.6	Q27
7	751	764	-3.1	.28	.99	1.1	.99	1.1	.08	.08	98.3	98.3	Q7
7	756	764	-3.62	.36	1.01	1.1	1.16	1.5	.02	.02	99.0	99.0	Q7
MEAN	511.6	763.8	1.00	1.2	1.00	1.0	.90	1.0	1.3	.06	77.6	77.8	
P. SD	183.3	763.4	1.71	0.06	1.05	1.8	1.10	1.9			13.9	13.9	

Further analysis on the items validity can be carried out through the Point Measure Correlation (PMC) as shown in Table 4. In Rasch analysis, an item is considered to be misfit if all three controls (Point Measure Correlation, MNSQ and ZSTD) for the respective items are not in the range. The Point Measure Correlation denoted by x where $0.4 < x < 0.8$; the outfit mean square as y where $< 0.5y < 1.5$; and the outfit z-standard (ZSTD) as z where $-2 < z < 2$.

However, Table 4 shows that all items in this test fit the model. As an example, Item 17 has a Point Measure Correlation of 0.05, which falls outside the range of $0.4 < x < 0.8$, so it is categorized as a suspected misfit item. When tested for the Outfit ZSTD = 3.3, it again falls out of the range and thus it becomes a highly suspected misfit item. However, for the last test, Outfit MNSQ = 1.23 falls within the range of $< 0.5y < 1.5$. Therefore, it is no longer categorized as a misfit item. This step has to be done for all items to determine if any of the questions should be labelled as a misfit item. The analysis shows that the items are considered to be in the acceptable range of the suggested fit indices.

However, to enhance the findings, Rasch measurement output allows the researcher to investigate the items based on the frequencies of responses of each of the distracters (Table 5).

The item, as the building block of a measure, must function in a way that contributes to the overall measure. When person reliability, item difficulty or person separation is not as expected as the findings in this research and not within the target range, a review on distracter performance has to be conducted (Livingston 2006). Complete item analysis is important during three stages, including item pre-testing, before scoring, and after scores have been reported (Livingstone 2006). This often provides a clue as to why an item may be too easy or too difficult. Similarly, when an item does not achieve the target level of discrimination, an examination of distracter functioning is important.

Table 5: Item Responses with Distracter Frequencies

Question	Data Code	Score Value	Data Count	%	Ability Mean		S.E. Mean	Infit MNSQ	Outfit MNSQ	PTMA Corr
					Mean	P. SD				
29	C	0	18	2	0.54	0.60	0.15	0.8	0.8	-0.14
	B	0	15	2	0.56	0.51	0.14	0.8	0.8	-0.13
	A	0	38	5	0.79	0.54	0.09	1.0	1.0	-0.12
	D	1	693	91	1.15	0.61	0.02	1.0	1.0	0.22
14	A	0	5	1	0.44	0.38	0.19	0.7	0.6	-0.09
	C	0	55	7	0.59	0.49	0.07	0.9	0.8	-0.23
	D	0	65	1	0.66	0.54	0.24	0.9	0.8	-0.07
	B	1	698	91	1.16	0.61	0.02	1.0	1.0	0.26
6	A	0	16	2	0.59	0.57	0.15	0.8	0.8	-0.12
	D	0	16	2	0.83	0.61	0.16	1.0	1.0	-0.07
	C	0	30	4	0.90	0.59	0.11	1.1	1.1	-0.07
	B	1	702	92	1.14	0.61	0.02	1.0	1.0	0.15
15	C	0	2	0	0.55	0.08	0.08	0.9	0.7	-0.05
	B	0	14	2	0.64	0.71	0.20	0.9	0.9	-0.10
	D	0	41	5	0.79	0.51	0.08	1.0	1.0	-0.12
	A	1	707	93	1.14	0.61	0.02	1.0	1.0	0.17
8	C	0	15	2	0.50	0.33	0.09	0.8	0.7	-0.14
	B	0	25	3	0.60	0.61	0.12	0.8	0.8	-0.15
	D	0	8	1	0.71	0.49	0.18	1.0	0.9	-0.15
	A	1	716	94	1.15	0.61	0.02	1.0	1.0	0.22
9	A	0	11	1	0.44	0.26	0.08	0.8	0.6	-0.13
	C	0	23	3	0.70	0.51	0.11	1.0	0.9	-0.12
	B	0	3	0	0.79	0.47	0.33	1.1	1.0	-0.03
	D	1	727	95	1.14	0.62	0.02	1.0	1.0	0.17
18	A	0	30	4	0.70	0.63	0.12	0.9	1.0	-0.13
	D	0	3	0	1.32	0.29	0.20	1.9	1.5	0.02
	C	1	731	96	1.13	0.61	0.02	1.0	1.0	0.12
	B	0	2	0	0.55	0.23	0.23	0.9	0.7	-0.05
37	A	0	2	0	0.72	0.46	0.15	1.0	0.9	-0.07
	C	0	10	1	0.86	0.31	0.08	1.2	1.0	-0.06
	B	0	15	2	0.86	0.31	0.08	1.2	1.0	-0.06
	D	1	737	96	1.12	0.62	0.02	1.0	1.0	0.10
2	B	0	1	0	-0.14	0.00	0.22	0.5	0.3	-0.07
	C	0	13	2	0.77	0.77	0.20	0.9	1.1	-0.07
	A	0	11	01	0.84	0.62	0.02	1.1	1.1	-0.05
	D	1	738	97	1.12	0.61	0.02	1.0	1.0	0.10
	Missing*	*	1	0#	1.09	0.00				0.00
27	D	0	12	2	0.70	0.43	0.13	1.0	0.9	-0.08
	C	0	1	0	0.93	0.00		1.4	1.0	-0.01
	A	1	751	98	1.12	0.62	0.02	1.0	1.0	0.08
7	B	0	2	0	0.63	0.46	0.46	1.0	0.8	-0.04
	A	0	6	1	1.08	.043	0.19	1.5	1.3	0.00
	D	1	756	99	1.11	0.62	0.02	1.0	1.0	0.02

Table 6: Distracter Analysis for Item Q37

Item	Characteristics	Inference	Action
Q37	764 students answered 96% got D correct Options A, B and C are not attracting students to answer.	Distracters A, B and C not functioning. Students (low ability) marked the wrong answers.	<ul style="list-style-type: none"> Q37 needs to be improved or removed. Improved distracters to be plausible answer (to achieve level of discrimination)
	Location at -2.37 logit. This is below Meanitem = 0.0 This makes Q37 as an easy question	Based on question numbering, Q37 should be higher difficulty and testing higher ability.	

Similarly, the other items can be analysed in the same manner as shown in Table 6. In this way quality items will be deposited into the bank for future test application. This kind of analysis will increase test developers understanding in improving the function of the distracters. The role of distracters has become more salient as educator’s demand instructionally relevant information. This means that we need information about what students know and can do as well as information about the misconceptions or errors in problem solving students continue to use.

CONCLUSION

This study has proved that students’ performance on the Health and Wellness exam results can be measured using Rasch Measurement Model.

Furthermore, looking at the findings and discussions, we can also note that it was indicated that substantial number of questions from the forty MCQs requires significant improvements before they can be deposited into the Question Bank.

Before we proceed, let us take step back and ask ourselves, how do we qualify the questions before we store in the item bank? Can Rasch Measurement Model be useful as a tool for this? The answer is, YES.

From this analysis, there are several recommendations that can be proposed in order to increase the quality and reliability of the test items hence and later if implemented enables them (the questions) to be qualified and deposited into the item bank for later applications.

Item Gaps

Identifying, replacing and/or rephrasing the current items will enable the test developer to reduce the item gaps. Items should be constructed to test all levels of difficulty.

Order of Items Difficulty

Examining the responses of the distracters and summarizing the results of students in a table will assist test developers in rearranging the order of items to allow students to spend more time to answer tougher questions.

In the item bank system, the items have to be coded and tagged accordingly to reflect Student Learning Time (SLT), competency area and instructional objective as well the derived measures of item difficulty based on the Rasch analysis. Overlapping questions need to be revised and improved. The easiest items are placed at the bottom and gradually the most difficult items are on the top. Accordingly, the ordering of items should follow the same sequence from easy to difficult items.

Another strategy is reorientation in terms of item development will help. Asking item writers or editors to attend to the distracters requires explicit attention to the attractive aspect of the incorrect options. Asking ourselves: “Is this an effective attractor?” rather than “distracter” will improve our ability to be explicit about the intent of the option and characteristics of the students to whom it attracts. Improvements in item writing and item modifications that strive to make items and tests more widely accessible will contribute to the development of high-quality tests for wider audiences.

In conclusion, by using the Rasch measurement model, researchers have obtained high reliability value to the reliability test. This reliability test and respondents also indicates that the set of the questionnaire is valid and reliable to measure competitiveness. The findings have answered the possibilities designed to examine the suitability of the items in the competitiveness instrument. The item reliability is high and this means the item is stable.

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ASSESSING THE INFLUENCE OF PERCEIVED BEHAVIOURAL CONTROL AND KNOWLEDGE ON POLYTECHNIC STUDENTS' INTENTION TO ADOPT WORKSHOP SAFETY HABIT

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ABSTRACT

This paper reports on the study conducted to explore the influence of Perceived Behavioural Control and Knowledge on Polytechnic Students' intention to adopt workshop safety behaviour for sustainable working environment. The study utilised the Theory of Planned Behaviour (TPB) to analyse students' intention to perform behaviour related to workshop safety and sustainability. Two hundred and sixty (260) Engineering Technology students were randomly selected from a public Polytechnic in Nigeria and assessed through a Likerts' type scale structured questionnaire about their Perceived Behavioural Control and Knowledge toward intention to adopt workshop safety behaviour. Standard multiple regression was used to assess the students' intention to adopt the behaviour. The result shows that both Perceived Behavioural Control and Knowledge are practically important in predicting individual's intention to safety habit in school workshop. A model of practical important that explained 47% variance emerged with all the two predictors (perceived behavioural control and knowledge) found to be significant predictors of the polytechnic students' intention to adopt workshop safety habit.

Keywords: *Perceived Behavioural Control, Knowledge, Intention, Safety Habit, Predictors*

INTRODUCTION

Workshop safety awareness is fundamental to sustainable working habit in school workshop environment. Engineering technology students who are daily users of the workshop must be taught on how to identify and recognise hazards in their workplace, and be able to assess and control those hazards they might have come across in their work place. This can only be achieved through inculcating the workshop safety habit as part of the necessary attitude, (Ontario, 2001). It is the responsibility of the instructors and everyone working in the workshop to safeguard the lives and safety of students working in the workshop, but the most important aspect is for the students to inculcate the safety habit in their mind. Workshop safety campaign can also be mounted by instructors to increase student awareness, and to develop basic workshop safety habits which they can readily remember in any challenging situations that they may find themselves in.

Owing to the nature of today's current students' placements, most students begin with limited background and skills to deal with difficult safety circumstances. Many students enrolled into technical and engineering courses were without the necessary knowledge and training regarding safety issues as they relate to workshop based practice. The issue of potential danger in the workshop is one of the things that need to be given importance in creating awareness as one begins the journey as a student or instructor to the workshop. Therefore, it is in the best interest of every workshop user to be vigilant

about the workshop surroundings and to have a plan at all times should there be any danger while working in the workshop. Knowledge of the workshop safety requirements and students' perceived behavioural control are expected to play a vital role in determining students' likelihood of avoiding workshop hazards. This is in addition to learning a set of achievable interventions aimed at recognising, managing, and avoiding dangerous situations at all times when working in the workshop (Fernandez, 1995). It is important that students are well aware of the universal practices in workshop safety precautions as well as considers becoming immunised to protect against exposure to potential health hazards.

Conceptual Framework

Previous research identified that knowledge can influence behaviour toward decision making (Blackwell, Minard and Engel, 2001). It was revealed that an individual's behaviour may be influenced by his/her awareness knowledge of the risks and benefits associated with executing a particular behaviour (Brucks, 1985; Rogers, 2003; Dwived, 2005). Therefore an individual's intention to adopt workshop safety habit may be associated with his awareness knowledge of the consequences associated with its adoption that will assist him to assess, interpret and react to a stimulus. Knowledge refers to what a person actually and correctly knows about a phenomena, and stores in one's memory so that he can retrieve or recall exactly what he/she know about that phenomena (Bello, Ahmad and Sahari, 2013).

This study therefore, decided to include knowledge as a predictive variable on students' intention to adopt workshop safety habit. The study use the theory of Planned Behavior (TPB) being one of the most significant and robust models in explaining a person's behaviour (Ajzen, 1985, 1991; Mathieson, 1991). A variety of models derived from TPB was used to make accurate predictions of human behaviour in diverse situations. It is based on the recommendation of Ajzen for improvement of the theory in other ways possible that, this study extended the theory with another variable "*knowledge*", which previous studies (such as Brucks, 1985; Rogers, 2003; Dwived, 2005) suggested that knowledge is an important predictor of human behaviour. Therefore, by this, the study incorporated knowledge into Ajzen's TPB and came up with a conceptual framework (Figure 1.)

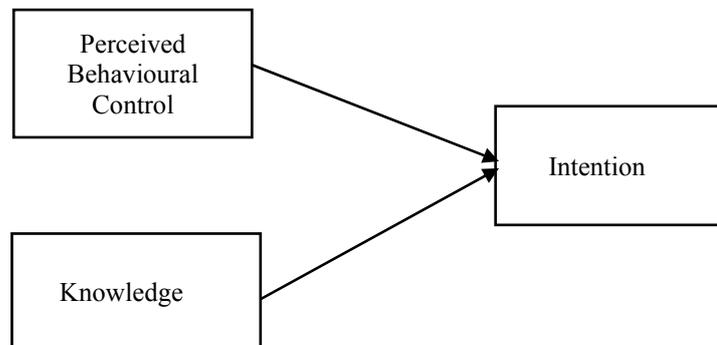


Figure 1

In this framework, *knowledge* was expected to influence students' behavioural intention to workshop safety habit in a positive way along with *perceived behavioural control*. This means that the study expected that each construct or dimension would demonstrate statistically significant influence on polytechnic students' intention to adopt workshop safety habit.

Statement of Problem

Considering the importance of workshop safety in sustaining a safe working environment, it is important to assess what students understand about workshop safety and whether they intend to adopt safety working habit in the workshop environment. Their intention to adopt the safety working habit in the workshop is critical to ensuring a safe working environment. Yet research efforts in assessing and

understanding this intention is acutely lacking. There were basically no research found that directly examine students' intention to adopt workshop safety habits especially in Nigerian tertiary institutions. Only a few others have looked at the awareness aspects of workshop safety, explaining the value and need for safety precaution in the workshop (Abdullahi, 2016) with no attempt to assess students' intention to such safety habits. This study was prompted by the acute lack of research in workshop safety habit among students, particularly Nigerian Polytechnics students who are daily users of workshops. It was premised upon the idea that students 'safety in the workshop is an important foundation of the hazard free workshop practices and to the acquisition of the right frame of mind for safe working environment. Therefore research should be directed into assessing students' intention to workshop safety habit among polytechnic students in workshop working environment, as the findings may provide useful data for drawing up workshop safety initiatives in Nigerian polytechnics and other tertiary institutions.

RESEARCH OBJECTIVES

The primary objective of this study is to investigate the utilization of the theory of planned behaviour (TPB) Ajzen, (1991) in analyzing students' workshop safety habit and to investigate the predictive strength of possible relevant additional variable. In pursuance to the objective of the study, the following research questions were formulated thus:

- R1:** Does students' knowledge about workshop safety influence their intention to adopt sustainable workshop safety habit?
- R2:** Does students' perceived behavioural control toward workshop safety influence their intention to adopt sustainable workshop safety habit?

METHODOLOGY

Measurement of Perceived Behavioural Control

According to Ajzen, (1991), perceived behavioural control it refers to the individual's belief in the ease to execute a behaviour. The stronger the individual feels his/her ability to execute the behaviour, the more the resources and opportunities the individual possesses to execute the behaviour, the higher the perceived behavioural control. In this study, it refers polytechnic students' beliefs that they have total control on their intention whether or not to adopt workshop safety habit. Therefore this study is an assessment of whether students' perceived behavioural control on workshop safety influenced polytechnic students' intention to adopt sustainable behaviour on workshop safety rules and regulations, which was assessed through 5-points Likert scale items that required students to agree or disagree with the workshop safety rules and regulations.

Measurement of Knowledge

Knowledge is defined as the amount of information held in the memory that affects the way individuals assess, interpret and react to the stimuli around them (Blackwell et al, 2001). Brucks (1985) provided a categorization of knowledge by breaking it down to subjective and objective types. Subjective knowledge is an individual's perception or self-assessment of what and how much he or she knows about a subject. Objective knowledge refers to accurate factual information stored in the memory. In brief, perceived or subjective knowledge reflects what individuals think they know about a subject, while objective knowledge is a measure of what they actually know about it (Bello, Ahmad and Sahari, 2013).

This study is an attempt to assess whether students' knowledge on workshop safety rules and regulations influenced their intention to adopt sustainable behaviour on workshop safety habit, which was assessed through 5-points Likert scale items that required students to agree or disagree with the workshop safety behaviour.

Population and Sample

Two hundred and sixty (260) Engineering technology students from a Nigerian public polytechnic were randomly sampled from five colleges of the polytechnic, which comprised of both males (n =170) and females (n =90). All the engineering technology students were targeted to participate in the survey as they are the school workshop users; therefore every engineering technology student had equal and likely chance of participating in the survey. Two hundred and fifty six (256) questionnaire were returned and after screening the responses to the questions, four questionnaires were discarded due to poor responses of either omission of item or multiple choices, leaving 252 (96.9%) of the original number of questionnaires distributed which were used for the analysis.

Instrument

The study utilized an adopted and modified questionnaire to suit the workshop safety rules and regulations with two sections. Section "A" contained demographic items requesting details about gender, department, level and field of specialization. Section "B" contained ten (12) Likert-type items (six for each construct) that requested students to rate their level of agreement or disagreement on the adoption of sustainable workshop safety habit. The response categories used were "*Strongly agree*", "*Agree*", "*Undecided*", "*Disagree*" and "*Strongly disagree*". The items were validated by a number of experts on workshop safety behaviour content and psychometric properties. The internal consistency of the data of the twelve items was assessed utilizing a reliability test (i.e. Cronbach's α), and was found fit with $\alpha = 0.87$, which is very good for an exploratory study (Straub, Boudreau, and Gefen, 2004; Golafshani, 2003; Kirk & Miller, 1986).

Data Collection and Analysis

Data for the study were collected through two different means. First the instructors in the department and colleges' workshop were approached to help and administer the questionnaires in the workshop, which they gave to students while they are in the workshop, to fill them out on the spot and returned them before they leave. This method had ensured hundred percent response rate. Second, the researcher gives the questionnaire to students randomly identified by departments and colleges, which was done with the help of some class representatives. This gives a bit short of return. Analysis of the data involved a combination of descriptive statistics (i.e. percentages and frequency counts) for the demographic data of the respondent, and multiple regression analysis to address the research objectives respectively.

RESULT OF THE STUDY

From the analysis, a model of practical important emerged ($F(2, 252) = 126.354, p < 0.000$) (see Table 2). The model explained a 47% variance, with all the variables found to be significant predictors of the polytechnic students' intention to adopt workshop safety habit (Table 1). The two predictor variables "*Knowledge and Perceived Behavioural Control*" were of significant importance in predicting students' intention (see Table 3), knowledge ($\beta = 0.402, p = 0.000$), and perceived behavioural control ($\beta = 0.391, p = 0.000$). However, in the result, it can be observed in the model that knowledge has the highest impact ($\beta = .402$) in the prediction of students' intention to adopt sustainable workshop safety habit when compared to the variance explained by perceived behavioural control ($\beta = 0.391$).

Table 1: Model Summary

Model	R	R Square	Adjusted R Square	Std Error of the Estimate
1	.686	.470	.469	4.29

Predictor: (Constant), Total Know, Total PBC.
 Dependent Variable: Total Intention

Table 2: ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	6826.826	2	3413.413	126.354	.000
Residual	7808.658	250	31.235		
Total	14635.484	252			

Predictors: (Constant), Total Know, Total PBC
 Dependent Variable: Total Intention

Table 3: Regression Analysis: Coefficients

Model	Unstd Coefficients		Std Coefficients		
	B	Std Error	Beta	t	Sig
(Constants)	4.263	.782		34.146	.000
Total Know	.298	.059	.402	8.582	.000
Total PBC	.242	.034	.391	7.826	.000

Dependent Variable: Total Intention

CONCLUSION

In general, knowledge was observed to be the most consistent predictor of variance in behavioural intention to workshop safety habit, whilst both knowledge and perceived behavioural control significantly predicted the intention to sustainable workshop safety habit. Therefore, based on the finding of this study, recommending the inclusion of knowledge in Ajzen's TPB can be considered as particularly important, since it is a very good predictor of individual's behavioural intention. This study further confirmed the consistency of knowledge as a predictor of students' behaviour, particularly among Nigerian polytechnic students as the findings is consistent with previous study conducted on students' behaviour (Abdullahi, 2017). However, more studies need to be conducted in order to generalize the predictive power of knowledge on other social group and on the intention to different phenomena.

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EVALUATION OF FINAL YEAR MASTER'S PROJECT COURSE LEARNING OUTCOMES IN OPEN UNIVERSITY MALAYSIA

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ABSTRACT

Learning outcomes are statements on what students should know, understand and can do upon successful completion of a course. Achievement of the learning outcomes is an important criterion for a programme to be awarded with an accreditation qualification by Malaysian Qualifications Agency (MQA). Evidence from teaching and learning evaluation needs to be justified to demonstrate that the learning outcomes have been achieved. In line with this direction, the purpose of this study is to evaluate the learning outcomes of final year master's project according to course learning outcome and learning domain determined by MQA. This evaluation is carried out by analysing supervisor's feedback on their supervised student and student feedback themselves. The survey instruments were administered for postgraduate learners in the academic session of 2018, measuring to what extent that course completion has met the learning outcomes and fulfil the learning domain skills required. To strengthen the evidence, result obtained from master's project report awarded by supervisors and reviewers were compared according to report chapters, programme and learning outcomes perceived. The findings were discussed to highlight the concern, strength and weakness from the evaluation made. Several recommendations for continuous improvement and support were proposed to influence the quality of the course and achievement of the learning outcomes.

Keywords: *Course Learning Outcomes, Final Year, Master Project, Postgraduate Learners, Distance Education*

INTRODUCTION

Learning outcomes should be constantly evaluated on its achievement so that continuous improvement could be implemented. This process is to ensure that the graduates are qualified and meet the criteria set by the department and the university. There are several ways to evaluate learning outcome achievement based on certain courses like industrial training, final year project, problem based learning and final examination.

In line with this direction, final year master's project seems fit to showcase learner's knowledge which they have acquired over the duration of the whole course. The course that need to carry out independently goes beyond than just remembering facts but promotes higher forms of thinking such as evaluating concepts, processes, procedures, principles, performing case studies, producing project reports and giving presentations. Successful completion of the course is crucial to demonstrate learner's ability to grasp a wide range of knowledge and skills learnt during the programme, ability to research

an intellectual problem and writing a report. Furthermore, the most crucial aspect is that the course must be able to fulfil all the evaluation components determined by Malaysia Qualification Agency (MQA).

Therefore, the current study seeks to evaluate the learning outcomes of final year master's project according to course learning outcome and learning domain required by MQA using reflection, self-assessment through a survey and direct assessment through scoring marks awarded. The aim of this is to contribute towards the quality of the course in this distance learning education and improve the achievement of learning outcomes determined.

LITERATURE REVIEW

As part of fulfilment of graduation requirements, postgraduate learners in Cluster of Applied Sciences (CAS), Open University Malaysia need to carry out final year Master's Project (MP) course independently over a period of two semesters or eight months in their final year of study. The course objectives are to demonstrate a wide range of skills learned during course of study by producing a report that conform to the agreed cluster standard, to produce multidisciplinary research through the integration of material learned in several courses, to develop learners with problem solving and report writing skill. The project report submitted need to be structured according to five chapters which are introduction, literature review, methodology, findings and discussion and conclusion. In the aspect of grades, course counts for 15% weightage from overall postgraduate program.

A learning outcome is a statement referring to the actions student perform and uses action verb to describe the course outcome (Larson, 2017). The learning outcome in the MP course is to clearly highlight the importance on what the student should be able to do, know or values upon successful completion of the course. It is the primary documentation in the implementation of any academic programme. In addition to CLO, programme learning outcome, assessment criteria were also included as a guidelines. The MP course is offered throughout the postgraduate programme in the cluster with almost the same structure of course content but differences in the implementation fields. In due to this, a common CLO was established to be relevant across CAS programme for standardisation monitoring and assessment.

CLO should be measurable and observable via cognitive, psychomotor and affective learning domains. In other words, course learning outcomes should reflect essential knowledge, skills and attitudes and finally, represent the minimum performances that must be achieved to successfully complete a course. Thus the CLO defined need to be aligned with learning domain. Learning domains or some referred as learning outcome domains may be thought of as learning categories. There are three domains of learning: First, the cognitive domain involves knowledge and the development of intellectual skills (Anderson, Krathwohl et al., 2001). This includes the recall or recognition of specific facts, procedural patterns, and concepts that serve in the development of intellectual abilities and skills.

Affective Learning give focuses on growth in feelings, values, appreciation, motivation and attitudes (Krathwohl, Bloom et al., 1956). Krathwohl et al. (1956) describe five levels of internalization that are receiving, responding, valuing, organizing, and characterization by a value complex. As a value moves up these levels it is considered to be more internalized. Savickiene (2010) highlights teaching and learning focusing in affective domain must be taken seriously in the evaluation process as the ongoing economic restructuring, globalisation and development of technologies require specific attitudes and values toward the nowadays changes. Meanwhile, the third learning domain is about psychomotor skills: This would include physical movement, coordination and use of the motor-skill areas. These might focus on speed and efficiency, precision, procedures or techniques in execution (Dave, 1970).

The learning domain is considered in the evaluation so that the skill development required in the program offered have been addressed. The skills identified are Knowledge and understanding skill, Cognitive skill, Practical skill, Interpersonal skill, communication skills, digital skills, numeracy skill,

Leadership skill, Personal and entrepreneurial skill, Ethics and Professionalism. The formation of the skill used in this study have been defined according to Malaysia Qualification Framework (MQF) 2nd edition document. The MQF was established to illustrate all levels of higher education in Malaysia and serve as a national reference point for all Malaysian qualifications. This document was prepared by Malaysian Qualifications Agency (MQA) which is the main quality assurance and accrediting body and has the responsibility of assuring the quality of both public and private higher education programmes in Malaysia. Table 1 indicates the mapping the CLO with the learning domain and course components.

Table 1: Mapping the CLO, Learning Domains and Course Components

Course Learning Outcomes (CLO)	Learning Domain	Course Components
CLO1. Develop research problem and objectives in the relevant field	Knowledge and understanding skill Personal and entrepreneurial skill	Chapter 1 - Introduction <ul style="list-style-type: none"> • Research Background Problem Statement • Research Objectives • Research Questions/ (Hypotheses) • Significance of the Research
CLO2. Review related literature using appropriate resources in the relevant field	Interpersonal skill, Cognitive skill	Chapter 2 - Literature Review <ul style="list-style-type: none"> • Theoretical Framework • Conceptual Framework
CLO3. Design appropriate research methods to address stated objectives	Leadership skill, Practical skill	Chapter 3 - Methodology <ul style="list-style-type: none"> • Research Design • Data Collection Method • Data Analysis Method
CLO4. Discuss the research findings based on collected data	Digital skills, Numeracy skill	Chapter 4 Data Analysis and Result Chapter 5 Discussion and Conclusion
CLO5. Conduct the research with good communication, creative, ethical, professional and independent throughout the study	Communication skills Ethics and Professionalism	Oral Presentation <ul style="list-style-type: none"> • Verbal • Non-verbal

RESEARCH METHOD

The aim of this study is to evaluate the final year master's project (MP) course learning outcomes. The evaluation is carried out through the survey feedback from the supervisor and learners as well as the scoring marks awarded through the final report and oral presentation assessed by the supervisors and reviewers. The survey feedback, administered to postgraduate learners of Open University Malaysia (OUM) in the Cluster of Applied Sciences, who have successfully completed and submitted their final year master's project in academic session of 2018 that accumulated to 48 learners. This restriction is based to those who have experienced writing the final project successfully and not in the early stage of the course.

This survey instrument was designed to gain feedback on demographic characteristics of participants, learning outcomes, learning outcome domains and final year project learning experiences gained throughout the course. This survey feedback was also circulated to the MP's supervisor to evaluate their supervised learner's in the capacity to meet the course learning outcomes, learning domain as well as other relevant information needed such as supervision challenges and suggestion for further improvement of the course. Participants were rest assured of the confidentiality of individual response during the conduct of study. The survey result was analysed in the form of descriptive statistics and thematic analysis. In addition, scoring marks awarded through the final report and final oral presentation from the supervisors and reviewers as the direct assessment was included to provide a real picture of the course achievements.

RESULT AND DISCUSSION

The findings of this paper are discussed in relation to the survey instrument from the learners and supervisors and the scoring marks given through the MP report and oral presentation from supervisors and reviewers. Thus, the first section highlights the findings from the survey and the latter describes the findings from scoring marks awarded.

Survey Perception

The survey findings from learner's perspectives are presented into four sections namely participants characteristic, learning outcomes, learning domain and final year project learning experience.

Participant Characteristic

Total of forty eight participants responded to six demographic questions which includes: gender, age academic programme, sector, working experience and employment status.

Table 2: Demographic of Participant Characteristics

<i>Variable</i>	<i>Description</i>	<i>Frequency</i>	<i>Percentage (%)</i>
Gender	Male	37	77.1
	Female	11	22.9
Age	<=30years	3	6.3
	31-39years	22	45.8
	40-49years	16	33.3
	>=50years	7	14.6
	Academic Programme	MOSHRM	26
Sector	MPM	10	20.8
	MQM	7	14.6
	MFM	1	2.1
	MIT	3	6.3
	MESM	1	2.1
	Private	38	79.2
	Government	5	10.4
	GLC	5	10.4

Working Experience	<=5 years	5	10.4
	6-10 years	7	14.6
	11-15 years	18	37.5
	>=16 years	18	37.5
Employment status	Employed	41	85.4
	Self	4	8.3
	Employed		
	Unemployed	3	6.3

Based on the descriptive data in Table 2, it indicates that majority of the participants successfully submitted their MP project respectively from the programme of Master of Occupational Safety and Health Risk Management (MOSHRM) (54%), Master of Project Management (MPM) (21%), Master of Quality Management (MQM) (15%), Master of Facility Management (MFM) (2%), Master of Information Technology (MIT) (6%), Master of Environmental Sustainability Management (MESM) (2%).

Male learner's dominant by 77% as compared to female learners (23%) who completed the Master's Project in three semesters in the year 2018 ranging from the age 31-39 years (46%), 40-49 years (33%), more than 50 years (15%) and less than 3 years (5%). 79% of the learners are currently working in the private sector while remaining from the government and Government Link Companies (GLC). The results indicate that majority of the learners have vast working experience more than 16 years (37.5%) between 11 to 15 years (37.5%), between 6 to 10 years (15%) and less than 5 years (10%) in the area of oil and gas, manufacturing, information technology, construction and medical. Most of the postgraduate learners hold the management position in their respective field.

Course Learning Outcomes (CLO)

In general, findings in CLO achievement from the six programme offered in cluster are presented in Table 3. It is interesting to note that, achievements perception from the supervisor to their supervised student are higher compared to the learners themselves. This indicates that the supervisor perceived that their supervised learners were competent to conduct the MP course studied. One factor that contributes to the supervisor's high perception is due to the adult learner's background that are more benefitted from the experience and communication skill gained through their working line.

Based on the learners' perspective of the course learning outcomes, the research methods (CLO3), discussion and data analysis(CLO4) found to be the highest means followed by conduct the research with good communication, creative and ethical professional and independent throughout the study (CLO5), review literatures (CLO2) and develop research problem and objectives (CLO1). The lowest mean value from CLO1 that require learners to formulate research problem, objectives, question or hypotheses is a typical problem for any learners especially in distance education setting. To kick-start the project will be always the hardest but once they able to grasp the idea, they will get better in writing. However, further improvement is needed to increase the mean value of CLO perception from the learner's perspective to be at least on par or higher with their supervisor perception.

Table 3: Course Learning Outcomes

Course Learning Outcomes (CLO)	Learner's Feedback Mean	Learner's Standard Deviation	Supervisor's Feedback Mean	Supervisor's Standard Deviation
CLO1. Develop research problem and objectives in the relevant field	3.88	0.489	4.09	0.668
CLO2. Review related literature using appropriate resources in the relevant field	3.90	0.592	3.97	0.717
CLO3. Design appropriate research methods to address stated objectives	3.94	0.561	3.85	0.610
CLO4. Discuss the research findings based on collected data	3.94	0.561	4.12	0.640
CLO5. Conduct the research with good communication, creative, ethical, professional and independent throughout the study	3.92	0.613	4.21	0.641

Learning Domain

The learning domain as in Table 4 is considered in the evaluation so that the skills required in the MP course are addressed. Overall, the achievement of learning domains is higher compared to CLO achievement. Similar with CLO findings, achievements of learning domain perception from the supervisor to their supervised student are higher compared to the learners themselves. This indicates that the supervisor perceived that their supervised learners have adequate skills to conduct the MP course. The highest skill score with mean value 4.47 given by the supervisors highlight on the ethics and professionalism. This finding also in the agreement with the learner's perception stated the highest mean value 4.23 on the ethics and professionalism. These similarities can be explained due to adult learners that are more exposed to corporate standards of behaviour is expected to be more professional and ethical. Meanwhile the lowest mean value that are consistent between supervisors (3.94) and learners (3.83) are on the numeracy skill. These agreements may be explained due to the difficulty experienced by learners particularly when analysing and interpreting their collected project data.

Table 4: Learning Domain Skills

Skills	Learner's Feedback (Mean)	Learner's Standard Deviation	Supervisor's Feedback (Mean)	Supervisor's Standard Deviation
Knowledge and understanding skill	4.06	0.480	4.18	0.626
Cognitive skill	4.00	0.546	4.09	0.621
Practical skill	3.98	0.601	4.06	0.694
Interpersonal skill	4.10	0.592	4.38	0.604
Communication skill	4.13	0.606	4.29	0.676
Digital skill	3.98	0.601	4.18	0.673
Numeracy skill	3.83	0.519	3.94	0.694
Leadership skill	4.06	0.598	4.24	0.654
Personal and entrepreneurial skill	3.98	0.565	4.18	0.521
Ethics and professionalism	4.23	0.592	4.47	0.507

Learning Experience and Challenges

In the responses to the open-ended survey, all participants reported entirely positive views that working on the MP course expose them having the experiences conducting research, writing academically, enhance critical thinking and problem-solving skill. Learners highlight several challenges encountered while working the MP. Among the concern raise are the time constraint working while learning, difficulty in academic writing particularly in formulation of research problem, writing the literature review and interpreting collected data. In addition, another concern to address are on the need to learn statistical software for data analysis writing and pushing the commitment to finish the course within the time frame.

In the supervisor's perspective responding to the challenges encountered while supervising the student working their MP course. They raise the concern on the delay of completion are due to many reasons such as limited time, work commitment and research writing skill. However, time limitation appeared to be the most common reason since all learners are adult and working while learning.

Suggestion for Improvement

Overall, learners indicate that they need continuous project writing workshop such as statistical analysis and literature review writing. In addition, they also in need for supportive administrative matters for smooth operation process between learners and executive in charge. The same issues addressed by learners are also highlighted by the supervisors such as the need for continuous research method, data analysis and research writing workshop. Other concerns are raised such as the need for formal introduction session arranged by the cluster to establish a link for the research work between potential supervisors and learners. In addition, a briefing session in a semester ahead before actual registration of MP course are highly recommended for the awareness, guidelines and research area to be explored. Strict monitoring also can be helpful to assist learners to finish the MP within schedule while establishing good communication with their supervisor. It is hopes that these suggestions can significantly influence the quality of the MP course for its success or failure.

Scoring Marks

The finding to show real picture CLO achievement is best represented through the scoring marks awarded. Thus, a detail breakdown between the chapters in the MP report, programme and mark awarded by the supervisor and reviewer are highlighted as in Table 5. below.

In the perspective of supervisors, the finding shows that the lowest scoring mark compared to other chapters given is in the Chapter 1 with 69.6 percentage on the MESM programme. However, this finding can't be concluded for all the programme that has been assessed since MESM has only one student that submitted the report. The same goes with the second lowest score from the MFM programme, only one student submitted the report too. Even though that is the case, Chapter 1 still represent as the lowest scored marks from MOSHRM and MQM programme. This finding is also align with Table 3. which also indicates the same result on lowest achievements on the first CLO which represented in writing through Chapter 1 from learner's feedback survey. Highest scoring marks perceived by supervisor is on the Chapter 3 with 87.5 percentage in the MIT programme. This finding is as expected for the MIT programme, as the research methods in the Chapter 3 is very much focus on system designing and development method. Failure to know the method, learners will have difficulty in developing the system. Meanwhile for the rest of the programme, the research method is very much based on survey and interview approach.

Table 5: Master’s Project Scoring Marks from Supervisor (SV) and Reviewer (RW)

Programme	Descriptive Statistics – Scoring Marks								
	Chapter 1		Chapter 2		Chapter 3		Chapter 4 and 5		Oral Presentation
	SV	RW	SV	RW	SV	RW	SV	RW	RW
MOSHRM	74.68	68.26	77.71	51.07	77.96	63.11	75.25	63.00	63.84
MPM	80.35	69.50	78.09	64.60	76.26	74.00	76.84	67.67	76.00
MQM	75.44	60.00	82.17	66.71	82.12	62.91	75.52	67.67	64.28
MFM	74.00	70.00	75.00	60.00	75.00	66.70	71.00	60.00	50.00
MIT	82.63	78.33	77.16	53.33	87.50	73.23	77.66	71.23	75.00
MESM	69.60	75.00	75.00	40.00	75.00	40.00	73.00	57.00	50.00

Based on the perspective of reviewer view, the lowest scoring marks awarded is in the Chapter 2 with 51.1 percentage is in the MOSHRM programme. This is due to inability of learners to identify and analyse research literature. Evaluation of Chapter 2 is devoted to the assessment of the literature review by focusing on the learner’s ability to orderly organize the ideas, make an analysis on previous studies and critically provide comments to the literatures. Achieving the lowest of score data showed some room for improvement in MP report in order to improve the abilities of students in the literature study. Highest scoring mark perceived by the reviewer is on the Chapter 1 with 78.3 percentage for the MIT programme. This is justifiable as learners who are proposing for the improvement on the existing system for their MP course are much easier to define the background, problem and objectives as they are very familiar on the system usage compared to other learners who need to do research and review new area of studies.

Meanwhile, scoring marks on the oral presentation in the last column are based on verbal (clarity, concise, pronunciation, grammatical structure) and non-verbal (eye-contact, posture, tone, gesture, appearance) cues. The results of this study indicates that the lowest scoring marks are from MFM and MESM. As highlighted earlier only one student submitted the report for each of the programme, thus, scoring data from MOSHRM programme with 63.84 percentage is preferred to represent this assessment. In general, the scoring marks of oral presentation has passed 50% of passing rate, however it is still below of 80% percentage to gain grade A marks. This finding may be viewed as room for improvement to further increase the oral presentation skill among learners.

Another interesting finding to note, that there is big difference on the scoring marks awarded between supervisors and reviewers. This contradictory result may be due to anticipation of supervisors are more lenient to award the marks to their supervised learners, as they have supervised their learner for several semesters of studies. Meanwhile, reviewers will only get to meet the student during the oral presentation. It is important to highlight too that supervisor play a major role in the weightage of MP report which contribute to 70% compared to reviewer that is only 30% from the overall score given.

To conclude the finding and discussion in this section, the evaluation through scoring marks should provide a real picture of the course achievements. A higher marks awarded by the supervisors and reviewers to each student means greater success for the student in grasping the course learning outcomes. However, evaluation of perceived learning outcomes emphasizes the importance of reflection and self-assessment. Learning will be easier and holistic when learners understand what goal they are trying to achieve. Supervisors and lecturers in the cluster should continuously help learners in clarifying the intended learning as the lessons unfold. Eventually, it is expected that learners be able to direct their own learning.

CONCLUSION

The aim of this study is to evaluate the final year master's project course learning outcomes. The evaluation is carried out through the survey feedback and scoring marks awarded through the final report and oral presentation. The direct evaluation through scoring marks provide a real picture of the course achievements. A higher marks awarded by the supervisors and reviewers to each student means greater success for the student in grasping the course learning outcomes. However, evaluation of perceived learning outcomes emphasizes the importance of reflection and self-assessment. Also, it can be concluded that there are slight differences from feedback survey compared to scoring marks methods show that the current evaluation process that being used in the course is very effective in reflecting the learner's understanding on their learning achievement. Learning will be easier and holistic when learners understand what goal they are trying to achieve to the desired learning outcomes. In addition, a few recommendations for improvement of the evaluation process are proposed in this study particularly in restructuring the existing evaluation process in the course by taking the consideration of the mapping used in this study. Moreover, continuous support from all parties involve are expected in achieving the intended learning outcome as the lessons unfold for learners to easily manage their own learning pace.

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GRAMMATICAL ISSUES IN PREPARING BILINGUAL EXAMINATION QUESTIONS AT A TERTIARY ODL INSTITUTION

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ABSTRACT

This paper examines grammatical problems in bilingual examination papers at an Open Distance Learning tertiary institution. Bilingual examination papers evoke multiple problems particularly when aiming for equal meaning in both languages and no grammatical errors. Errors may persist even with extensive care and diligence. Errors may be problematic for both learners and the academicians grading the papers. English - Malay translation is a popular area of study in Malaysia with numerous papers but, to date, we found no literature examining grammatical problems in translating examination questions from English into Malay, nor Malay into English, particularly in the context of ODL institutions that provide bilingual examination questions. This absence evokes questions on the nature of the grammatical (and syntactical) problems. This paper examines bilingual examination questions selected from multiple disciplines to ascertain the types of errors that appear in them. These findings are compared to errors from other genres. Analysis shows two areas of grammatical errors: in verbal elements (VP) and prepositional phrases. This may be because these constituents require knowledge of the semanticity more than structure and form. Knowledge the specific kind of errors here may help the institution to provide training for people involved focusing on the specific area where it is needed.

Keywords: *Grammar, Syntax, Error, Examination, Questions, TGG*

INTRODUCTION

This exploratory study was conducted in an Open Distance Learning tertiary education institution which uses bilingual examination papers. The courses at this institution are predominantly offered in English except language specific courses: for example, Mandarin and Tamil. The use of English was adopted due to demand for it from employers, particularly in the private sector. Moreover, in spite of the Malaysian education system being run in Malay, some sections of the Malaysian public are unable to use the language at higher levels, particularly not in tertiary education.

The focus of this study is the examination questions that are set in two languages: Malay and English. The aim here is to show that using bilingual examination papers requires much more than a simple case of translating questions from one language to another language.

These papers are prepared by subject matter experts who are as follows;

1. They all have postgraduate qualifications in their respective fields. They are employed to prepare examination papers in their respective fields.
2. They are all experienced educators in their respective areas. The question setters are also tutors in their respective fields.
3. Some of them have experienced living and studying overseas in countries where English is spoken as the native tongue.

The process of examination paper preparation.

1. The question setters are assigned by the faculty. They are generally chosen from the faculties' database of subject matter experts. The subject matter experts would be chosen from the academic community or relevant industry. They are chosen based on their qualification and experience.
2. The draft papers are submitted to the faculties where they are given to moderators. The moderators are lecturers in the respective subject who are either employed by the university or members of other institutions, or work in relevant related industry.
3. The moderated papers are either returned to the question setters for corrections or edited to suit the standard examination format of the university by the faculty members – when there are no errors.

This process ensures that the finish products are often error free. Although, rarely, errors do occur for various reasons. This process also means that the content of the questions, in both languages, are meant to be in the questions. This paper focuses on bilingual examination questions, thus this also applies to these papers in both languages because the papers are moderated by peers in the respective field or fields related to the specific area of the examination paper.

There is, however, a persistent problem. From personal experience both setting these examination papers and moderating them, we found that disagreements evolving around the choice of terminology used and misunderstanding among students often occur. The latter, emerging from the common requests for clarification from students concerning these questions involving, usually the following areas:

- (a) The questions in the different languages do not make the same demands
- (b) The terms used in one language does not suit the terms used in the other.

Hence, we arrive at the need to write this paper.

METHODOLOGY

The Objective of This Paper

The aim here is to show the subtler problem that arise from using two languages (in this case, Malay and English) in examination papers. The objective of this paper is to show that using bilingual examination papers requires much more than a simple case of translating questions from one language to another language. This is not focussed on grammatical errors in the translation because these are rare in this corpus: the papers are set by competent practitioners and educators in the relative fields. Moreover, the questions papers go through a moderation process before being cleared for use.

The ‘subtler’ problems include mainly cultural and semantic issues. For example, this paper points to words in different languages can be regarded cross-linguistic synonyms but are actually polysemous with significantly different meaning particularly in the context they are being used.

We propose that while it is relatively simple to present questions simultaneously in two languages, the process requires a greater sensitivity to cross-linguistic and cross-cultural differences both in linguistic and cultural terms.

The Problem Posed by the Material

From the beginning, we learnt that the corpus tools we have available (Wordsmith and Ant Conc) are not able to perform the primary analysis because even when the questions express the same meaning, the difference in syntax structure ensures that:

- (a) The position of Word1 in language A does not always correlate with the position of Word1’s synonym in language B.
- (b) The relationship between the constituents of the sentences in the correlating languages are not the same. This means that the sequence of constituents in the correlating sentences are not the same. Consequently, Word1L1 cannot be automatically compared with Word1L2 because they are in different position in their sentences.

The Solution

The solution for analysis is to manually compare of the question pairs means that the sample taken from the corpus must be small. Thus, the question pairs are taken from randomly chosen questions papers. The question pairs that exhibit instances of irregularities on the kind mentioned above are selected and used herein.

Note again that we are not looking for grammatical errors because errors are easy to find, and they are handled in the initial preparation stage of the examination papers.

We are looking at the specific instances areas that are “hard to get right” and require deeper knowledge of both languages in terms of differences in culture, semantics, and pragmatics. The point is that preparing multilingual examination papers requires extensive knowledge of language and culture: it is essentially an area of both cross-cultural communication and a site of intercultural communication. Thus, it requires the necessary care and focus.

The primary step is to categorize the question pairs into groups that exhibit similar patterns of irregularities. Secondly, we will try to offer an account for the irregularities. Finally, suggestions for further research and effort in preparing bilingual examination questions will be made.

QUESTION PAIRS WITH NO PROBLEMS

Question pairs placed into this category are non-problematic bilingual questions. These question serves as a control group in which the question have the following characteristics:

- I. The question pairs express equal modality in both languages
- II. The grammar of the question pairs does not express different demands
- III. There is no culturally based difference between the questions in the pairs.

The Question Pairs

- (a) **Why must discipline be given priority in early childhood education?** / *Mengapa disiplin perlu diberikan keutamaan dalam pendidikan awal kanak-kanak?*
- (b) **Observational method** is often employed as a methodology in psychology research. **What do you understand by the term ‘observational method’? Discuss the THREE strengths and THREE weaknesses of this method.** / *Kaedah pemerhatian sering digunakan sebagai metodologi dalam kajian psikologi. Apa yang anda faham dengan istilah ‘Kaedah Pemerhatian’? Bincangkan TIGA kekuatan dan TIGA kelemahan kaedah ini.*
- (c) **Discuss how Malaysian education system can provide a legitimate mechanism for the students to achieve and “move up” in social class with appropriate examples** / *Bincangkan bagaimana sistem pendidikan Malaysia boleh membekalkan mekanisme yang sah untuk pelajar mencapai dan “bergerak ke atas” dalam kelas social dengan contoh yang bersesuaian.*
- (d) **What FOUR (4) aspects would you suggest to teachers who want meaningful knowledge construction among students?** / *Apakah EMPAT (4) aspek yang akan anda cadangkan kepada guru yang ingin membantu pelajar membina pengetahuan yang bermakna?*

PROBLEM ONE: DIFFERENT MODALITIES

Two words may be regarded as cross-linguistic synonyms, but words often require more than syntactical structure to be meaningful. Culture often play a big role in this difference. A term or an expression may be neutral in their respective languages but be inappropriate in the other language. The bilingual questions in this category are grammatical in both languages and the translations. The sentence structure expresses different modalities in the question pairs.

The Question Pairs

- (a) **What are the FOUR Positive Qualities that make an effective teacher.** / *Nyatakan EMPAT Kualiti Positif yang **boleh membentuk** guru yang berkesan.*
 - (1) ‘that make’ and ‘*boleh membentuk*’ actually carry different modalities: “*Boleh membentuk*” actually means “can make”. Syntactically the pair are appropriate with the exception of the underlined terms. Syntactically both sentences are appropriate. Both questions are also acceptable in the respective tongues. However, “that make” carries the factual statement of the simple tense which means that the action stretches from an indefinite past to the indefinite future, whereas “*boleh membentuk*” expresses likelihood or possibility using a modal. The latter’s appropriate literal translation would be ‘can make’ which would not be as appropriate in English.
- (b) **The advancement of future technology has brought about many changes in the ways we teach and the ways we learn. Identify and discuss any one type of future technology that may have an impact on education. Your discussion should focus on the following aspects: How do we apply the technology in teaching and learning? How will the technology change teaching and learning? What are the changing roles of the students and the teachers?** / *Kemajuan teknologi masa depan telah membawa banyak perubahan kepada cara kita mengajar dan juga cara kita belajar. Kenalpasti dan bincangkan mana-mana satu jenis teknologi masa depan yang mempunyai impak kepada pendidikan. Perbincangan anda harus menumpu kepada aspek-aspek berikut: Bagaimanakah kita mengaplikasikan teknologi tersebut dalam pengajaran dan pembelajaran? Bagaimanakah teknologi tersebut **mengubah** pengajaran dan pembelajaran? Apakah **perubahan** peranan pelajar dan juga guru?*

- (i) Here again we have the same issue as in (a). “will... change” [future modal] versus “*mengubah*” [present simple] and “are the changing roles” [present continuous] versus “*perubahan*” [infinitive]
- (c) **Describe ONE activity that will be carried out in each of the technologies integration steps** / ***Huraikan SATU aktiviti yang dilaksanakan dalam setiap langkah pengintegrasian teknologi.***
- (d) **Piaget’s theory of cognitive development describes how individuals think. Describe FIVE assumptions put forward by Piaget and the implication of each for classroom practice** / ***Teori Piaget menerangkan mengenai perkembangan kognitif bagaimana individu berfikir. Huraikan LIMA andaian yang dikemukakan oleh Piaget dan implikasi untuk setiap amalan dalam bilik darjah.***
- (i) The difference here expresses the same issue as in (a) but focused on the meaning carried by singular words rather than phrases: “*huraikan*” actually means to elaborate which is beyond ‘describe’

The same issue is reflected in samples e, f, and g below.

- (e) **Suggest how you would use Vygotsky’s theory of assisted learning and scaffolding in your own classroom** / ***Cadangkan bagaimana anda dapat menggunakan teori pembelajaran berbantu dan perancahan Vygotsky dalam kelas***
- (f) **Suggest how you would use Vygotsky’s theory of assisted learning and scaffolding in your own classroom** / ***Cadangkan bagaimana anda dapat menggunakan teori pembelajaran berbantu dan perancahan Vygotsky dalam kelas***
- (g) **Suggest how you would use Vygotsky’s theory of assisted learning and scaffolding in your own classroom** / ***Cadangkan bagaimana anda dapat menggunakan teori pembelajaran berbantu dan perancahan Vygotsky dalam kelas***
- (i) In (d), (e) and (f), “You would use” is not “*dapat menggunakan*”
- (h) **Explain the meaning of Equality of Educational Opportunity according to the views of either the functionalist or conflict theorists. Discuss how Malaysian education system provides equal opportunity to all students in schools. Justify your answers with appropriate examples** / ***Jelaskan maksud “Kesamaan dalam Peluang Pendidikan” mengikut pandangan ahli teori fungsionalis atau konflik. Bincangkan bagaimana sistem pendidikan Malaysia dapat membekalkan kesamaan peluang kepada semua pelajar dalam sekolah. Justifikasi jawapan anda dengan contoh yang bersesuaian.***
- (i) This pair shows a different realization of the same issue. In Malay, “*dapat membekalkan kesamaan peluang*”, the question assumes that the education system has the ability to provide equal opportunity whereas in English, “*provides equal*” does not make allusions to possibility, it makes a statement that the system provides said opportunity from an indefinite past to the indefinite future.

PROBLEM TWO: NOT THE SAME ACTION BUT THE SAME NOTION

Using two languages simultaneously involves relating the same meaning in both languages. In some cases, the words in L1 and L2 are not directly synonymous but when in the sentences, they convey the “same” notion in making the demand of the question.

The Question Pairs

- (a) **Explain FIVE aspects of deficiency found in children with special needs.** / *Terangkan LIMA aspek kekurangan yang boleh diperhatikan pada Kanak-Kanak Berkeperluan Khas.*
- (i) ‘found’ is not the same as *boleh diperhatikan*. “Found” implies looking for something where *boleh diperhatikan* can be literally translated as “can be observed”. However, the demands made in both questions are the same and appropriate to the conventions of the language.
- (b) **How do you identify a child who is facing emotional problems?** / *Bagaimana anda mengenalpasti kanak-kanak yang mempunyai masalah emosi?*
- (i) “facing” and “*mempunyai*” are not synonymous. Here again the question verbs carry different meanings, but the questions do carry the same notion as appropriately expressed in the respective language and culture.
- (c) **Recommend SIX ways to help children cope with the stressful events.** / *Syorkan ENAM cara untuk membantu kanak-kanak menghadapi situasi yang tertekan.*
- (i) “to help children cope with” – “*untuk membantu kanak-kanak menghadapi*”. Here again constituents in question do not express the same meaning but do express the same notion as is appropriate by the convention of the language and culture respectively.
- (d) **Discuss Zone of Proximal Development (ZPD) and the concept of scaffolding by Vygotsky. Give TWO appropriate examples in teaching young children which are related to these two principles.** / *Bincangkan konsep Zon Perkembangan Proximal dan scaffolding menurut Vygotsky. Kaitkan KEDUA-DUA konsep ini dalam pengajaran awal kanak-kanak dengan memberi DUA contoh yang bersesuaian.*
- (i) “which are related” and “*kaitkan*”. The difference here is in the verbal phrase: in Malay, the two principles are already related, and the student is ask to show example of this relationship, where as in Malay the question asked the student to make the relationship happen and then produce the examples.
- (e) **Preventive supervision is one of the commonly used types of supervision by school administrators in enhancing the quality of education. State briefly its main function.** / *Pencerapan pencegahan sering digunapakai oleh pentadbir sekolah dalam mempertingkatkan kualiti pendidikan. Nyatakan dengan ringkas fungsi utama pencerapanini.*
- (i) “one of the commonly used” implies more than one option whereas “*sering digunakan*” simply means that X is commonly used.

- (f) **Discuss the extent to which the organisational structure of schools is bureaucratic in nature** / *Bincangkan sejauh manakah struktur organisasi sekolah itu birokratik keadaannya.*
- (i) “in nature” is not “*keadaannya*” [condition] but “*sifatnya*”. The difference lies in the term ‘nature’ and ‘*keadaannya*’. Nature implies an inherent state whereas *keadaannya* refers to a present status without the implication that it is inherent.

PROBLEM THREE: INACCURATE VERB

The Question Pairs

- (a) **List out FOUR types of basic reflexes in young infants.** / *Senaraikan EMPAT jenis refleksi asas bayi.*
- (i) *Refleksi* is reflection not reflexes even though the root word is the same.
- (b) **Discuss the conditions at school level that must be met for school-based management to occur in schools** / *Perihalkan syarat-syarat di peringkat sekolah yang perlu dipenuhi untuk membolehkan pengurusan berasaskan sekolah dilaksanakan di sekolah.*
- (i) Discuss in Malay is commonly translated as *bincangkan*. *Perihal* / *perihalkan* is a literary term which means, ‘tell the story of’. Although, this strictly not an error but the terms come from different genres and carry with them very different semantic loads.

ERRONEOUS

The Question Pairs

- (a) **Compare published curricula, with curriculum developed by teachers** / *Bandingkan kurikulum yang telah disediakan dengan yang dibina oleh guru.*
- (i) This pair can be regarded as simply erroneous because “published” and “*telah disediakan*” do not convey the same processes. Both phrases carry the notion that the item had been prepared by someone else beforehand, however, “publish” implies a deliberate, perhaps commercial, process where as “*telah disediakan*” encompasses the whole range of the preparation process, from a person at the kitchen table to a multinational publication effort.

ANALYSIS AND DISCUSSION

This paper is meant to show that preparing bilingual examination papers require far more than syntactical accuracy, it involves knowledge of cultural appropriacy also because, “language is ... one aspect of culture and is medium for understanding, sharing, and negotiating meaning for all aspects of the culture” (Lange, 1998:24 Cf. Yang & Chen, 2016:1129). Today, this factor is more of a reality. Modern Language Association (MLA) ad hoc committee on foreign languages (2007) asserts that,

- (a) “culture’ as a comparable concept with ‘language’ in today’s modern language,
- (b) Language is, “...a complex multifunctional phenomenon that links an individual to other individuals, to communities, and national culture”
- (c) Culture is represented in artifacts and in language itself.(Yang & Chen, 2016:1129)

Familiarity with the “other” language and culture is more important because, “culture is an integral way of life of the whole people” (Andreyeva, 2015:208) thus, the question setters needs competency beyond content matter. They need to be culturally competent specialists would include, “...highly qualified specialists who know foreign language at the productive level” who must be, “...capable to conduct communication in foreign language and who have linguacultural knowledge” (Andreyeva, 2015:208) which includes, includes, “whole complex of communication components”, these, “[represent] ... process of mastering knowledge of cultural diversity” which includes relationships between language and cultures of the world. (Andreyeva, 2015:212).

CONCLUSION

This paper aims to show that preparing bilingual examination questions needs to go beyond syntactical competence, even beyond content competence. There is inherently a cultural component to involved in preparing the bilingual questions that requires competency and mastery of subtle differences beyond syntax.

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MEDIATING EFFECTS OF GENERATION Y WORK VALUES' IN HUMAN RESOURCE PRACTICES AND EMPLOYEE RETENTION IN MALAYSIA

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ABSTRACT

Employee retention has received much attention especially in Western world. However it has generated limited empirical research in Malaysia despite its perennial importance. Employee retention can improve the organisation's competitive advantage which is currently one of the biggest challenges faced by organisations. Low employee retention or in other words, high employee turnover in Malaysia hovered around 16% from 2009 to 2016 and out of which, 78% of the total turnover was contributed by the manufacturing sector. The working environment in the manufacturing sector is generally more hazardous and strenuous in nature comparatively with other sectors. Additionally, Generation Y representing over 50% of the total work force and hold predominant role in the employment market in Malaysia are known to have different work values as compared to their predecessor generations thus making employee retention even more complex. Therefore, organisations should not structure a one-size-fit-all and generic employee retention practices. Instead careful planning and implementation of human resources practices will be required with the aim to retain Generation Y at their workplace. Moreover, it has been argued that monetary human resource practices i.e. compensation and pay is no longer sustainable and instrumental for employee retention. Hence, in this light, this study focuses on non-monetary human resource practices such career development, succession planning and work life balance to prove its 7 research hypotheses where there are other human resource practices beyond compensation which could retain employees. The Generation Y work values do have mediating effect in the relationship of the human resource practices and employee retention. Additionally, the population of this study will be individuals employed in the electrical and electronics manufacturing organisations and the sample size will be a minimum of 384. A mixed method research will be employed to integrate the quantitative and qualitative research with the aim of providing a more complete understanding of the research problem.

Keywords: *Work Values, Malaysia, Employee Retention, Career Development, Succession Planning, Worklife Balance*

INTRODUCTION

Employees are the most prevalent and valuable asset of any organisation. It is a conception that productivity and profit in any organisation cannot be achieved without employees (Kostagiolas & Asonitis, 2009; Steenkamp & Kashyap, 2010). Therefore, retaining employees is essential and viewed as a strategic opportunity for many organisations in order to stay competitive since these employees will work to fulfil the organisation's objectives (Aguenza & Mat Som, 2012; Oladapo, 2014; Nema & Nougriaya, 2015).

Unfortunately over the past two decades, employees have rampantly left their organisation for other organisation or even for other reasons. The action to leave the organisation creates low employee retention which is one of the biggest phenomenon and challenge faced by many organisations (Deloitte, 2014). Low employee retention brings negative cost implications to organisations considering the incurrance of replacement cost, recruitment cost, training cost of new employee, productivity loss during the vacant period and overtime payment to the existing employee to cover the gap which is estimated 150% of the previous employee's annual salary and benefits package. The cost could go up to 250% to replace someone in management or sales position (Phillips & Edwards, 2009). Overall, the estimated cost to replace an employee in Malaysia is MYR30,000.00 (The STAR, 2012). Sometimes, the cost of replacement of a good employee could be even higher and the employee may even be irreplaceable. (Bryson & McKenna, 2002; Zhang, 2016).

Low employee retention or in other words, high employee turnover in Malaysia hovered around 16% from 2009 to 2016 and out of which, 78% of the total turnover was contributed by the manufacturing sector (Hay Group, 2016). The manufacturing sector is experiencing low employee retention despite its significant role to the Malaysia's economy with specific reference to the electrical and electronic industry. This electrical and electronic industry is currently the leading subsector of manufacturing and largest export sector contributing significantly to its gross domestic product (GDP) in Malaysia (MATRADE, 2013; The STAR, 2015; Department of Statistics, Malaysia, 2017). It is anticipated that this industry will further propel in this 21st century especially with the introduction of Industry 4.0 which has big influence in manufacturing (Crnjac, Veza & Banduka, 2017). Therefore, retaining employees will still remain as one of the main priorities of action in view of the importance of employees to achieve the Company's objectives.

Additionally, it is undeniable that the working environment in the manufacturing sector comparatively with other sectors has been more hazardous and strenuous (Mc Laughlin, Hennebry & Haines, 2014) thus this could be one of the contributing factors for low employee retention. Therefore, organisations need to adopt sound and adequate practices in order to increase the employee retention as stated by Rubel & Kee (2013), good human resource practices will increase employee retention.

Problem Statement

Past studies have heavily focused on monetary human resource practices i.e. compensation and pay to retain employees (Peterson, 2005; Harell & Daim, 2010; Ng'ethe, Iravo & Namusonge, 2012; Balakrishnan & Lalitha, 2014; Haider, Rasli, Akhtar, Mohammed Yusoff, Malik, Aamir, Arif, Naveed & Tariq, 2015; Michael, Prince & Chacko, 2016; Mabaso & Dlamini, 2017). Monetary human resource practices have been overemphasized however, it is now argued monetary human resource practices alone no longer is sustainable and instrumental to improve employee retention. Some past researches instead have shown non-monetary human resource practices have great impact in retaining employees (Gadekar, 2013; Festing, Schafer & Scullion, 2013; Kwenin, Muathe & Nzulwa, 2013; Yousaf, Latif, Aslam & Saddiqui, 2014; Deery & Jago, 2015).

Fitz-enz (1990) stated no single practice can improve employee retention instead a cluster of practices will be required to retain employees in an organisation. Delery and Gupta (2016) concurred and highlighted the maximum gain in employee retention could be achieved through bundles of human

resource practices. Therefore, this study will focus on three non-monetary human resource practices i.e. career development, succession planning and work life balance with the aim to increase employee retention. These non-monetary human resource practices are effective and clustered under the rubric of good and high performance work practices which have positive impact on employee retention (Delery & Gupta, 2016; Pittino, Visintin, Lenger & Sternad, 2016; Narang, 2016).

Secondly, abundance of previous studies have fixated the direct causal relationship between human resource practices and employee retention (Johari, Yahya & Ahmad, 2012; Weng & McElroy, 2012; Ng, Lam, Kumar, Ramendran & Kadiresan, 2012; Tee, 2013; Fauzi, Ahmad & Gelaidan, 2013; Deshmukh, Joseph & Soni, 2014; Mabuza & Proches, 2014; Pritchard, 2014; Idris, 2014; Karve & Dias, 2016; Kossivi, Xu & Kalgora, 2016; Baharin & Wan Hanafi, 2018). The presence of generation in the organisations have been omitted or under emphasized since many past researches concentrated on employees as a whole. Researchers should not deny that the co-existence of employees from different generations in the workplace have also made employee retention more complex (Rani & Samuel, 2016). Moreover, the predecessor generations of Baby Boomers (*born between 1946 and 1964*) and Generation X (*born between 1965 and 1979*) were loyal to the organisation they work for thus their retention rate was high. On contrary, Generation Y (born between 1980 and 1999) showed a differing and pressing situation where a change of job among this generation is done almost every two years or they change their careers as many as seven times in their working life (Meuse & Mlodzik, 2010) thus demonstrating low employee retention.

This study will place attention to Generation Y in view of them being the core workforce since they represent more than 50% of the total workforce in Malaysia (Tay, 2011; Tee, 2013). However, despite Generation Y being the most dominant generation in the employment market, Generation Y reported the lowest employee retention compared with the previous generations in Malaysia (Queiri, Dwaikat & Yelwa, 2016).

Thirdly, plethora of studies have been conducted in USA, Europe, China and other Asian countries on the relationship between human resource practices and employee retention (Keane, Lincoln, Rolfe & Smith, 2013; Kwenin *et al.*, 2013; Tangthong, 2014; Delery & Gupta, 2016; Presbitero, Roxas & Chadee, 2016; Pek-Greer, Wallace & Al-Ansaari, 2016) however limited studies conducted to Malaysia. Moreover, the outcome of the studies conducted in USA, Europe, China and other Asian countries may differ and contradict the outcome of studies conducted in Malaysia in view of the different culture, economy, social and political condition among these countries. In addition, an aspect of this study will focus on the work values. Work values have become the subject of research within the generation context in recent years (Sharabi, 2016). Generation work values' are important consideration because these work values influence individual and organisation outcomes with specific reference to satisfaction, performance, commitment and employee retention (Smola & Sutton, 2002; Chen & Choi, 2008; Lyons, Higgins & Duxbury, 2010). Moreover, work values among each generation in each country is unique since different historical, cultural, societal and demographic factors does have an influence on the work values (Kupperschmidt, 2000; Macky, Gardner & Forsyth, 2008; Queiri *et al.*, 2016; Ting & de Run, 2015).

Finally, past studies have differing and inconsistent findings. Although, many studies have reflected the advantages of employee retention and its relationship with human resource practices (Jusoh & Parnell, 2008; Gould-Williams & Mohamed, 2010; Tan, 2011; Chitsaz-Isfahani & Boustani, 2014) conversely, there were also some previous studies picturing employee retention in a negative intonation which could burden organisations (Loquercio, Hammersley & Emmens, 2006; Iqbal, 2010; Self & Self, 2014). Additionally, some studies found employees could still not be retained in their organisation despite the implementation of human resource practices (Kossek, Lautsch & Eaton, 2006; Hess & Jepsen, 2009; Shaw, Park & Kim, 2013). Monetary and even non-monetary human resource practices were not able to retain some employees (Allen, Bryant & Vardaman, 2010; Yaghi, 2016).

In summary, the literature in Malaysia on human resource practices, employee retention and Generation Y work values' have been under explored despite its perpetual importance. As a result, there is substantial gap in the Malaysian literature in this area of study. Therefore, it is imperative for this study to be conducted in view of the limited past research examining the convergence of all three variables i.e. human resource practices, employee retention and Generation Y work values' in Malaysia. Additionally, there have been inconsistent findings and outcome among past studies in this area of study. Henceforth, it justifies for this study to be conducted.

Research Objectives

It is the hope of the researcher that the findings of this study will bring new insights and provide better understanding as to what extent does Generation Y work values' mediate in the relationship between human resource practices and employee retention in the electrical and electronics manufacturers. Therefore, the specific research objectives of this study are as follows:-

1. To examine the relationship between career development and employee retention among Generation Y in electrical and electronics manufacturers.
2. To examine the relationship between succession planning and employee retention among Generation Y in electrical and electronics manufacturers.
3. To examine the relationship between work life balance and employee retention among Generation Y in electrical and electronics manufacturers.
4. To investigate the mediating effects of Generation Y work values' in the relationship of career development and employee retention in electrical and electronics manufacturers.
5. To investigate the mediating effects of Generation Y work values' in the relationship of succession planning and employee retention in electrical and electronics manufacturers.
6. To investigate the mediating effects of Generation Y work values' in the relationship of work life balance and employee retention in electrical and electronics manufacturers.
7. To investigate the mediating effect of Generation Y work values' on employee retention in electrical and electronics manufacturers.

LITERATURE REVIEW

Money can initially attract employees but it is not the primary reason to retain employees in today's workplace especially in consideration of the presence of Generation Y (Oladapo, 2014). In this anticipation, organisations will need to plan and implement practices to retain its employees. The focus of this study is on three non-monetary human resource practices i.e. career development, succession planning and work life balance.

Career Development and Employee Retention

Career development defined as a succession of jobs in which a person advances to higher level and responsibilities within the organization as well as it involves acquiring of new skills and knowledge which is applied to the job (McDonald & Hite, 2005). Employees with enhanced skills and knowledge are entrusted with a progressed and higher role in the organisation with the aim to fulfill the organisation's objectives which in return results in higher satisfaction among the employee which leads to increased employee retention.

Past studies supported the notion that opportunities for an employee to grow and be promoted in its' career can increase their interest to continue to work for the same organisation (Chen & Choi, 2008; Tee, 2013; Kaliannan, Abraham & Ponnusamy, 2016). A survey conducted by Manpower Malaysia amongst Generation Y showed career development drives employee retention and restricts them from leaving their organisation and at the same time, increases their loyalty (Haggag, 2010). Generation Y are interested in developing their career since they are able to acquire skills and knowledge that will strengthen their employability (Van Rooyen, Du Toi, Botha & Rothmann, 2012). The finding of these studies reflect career development is an important employee retention tool.

Succession Planning and Employee Retention

Succession planning has gained momentum in this new millennium. Succession planning is a process to identify, develop and ensure leadership continuity in key positions within the organisation. Succession planning emphasizes on the flexibility in the lateral or vertical employee movement within the organisation expected to meet the current and future needs and goals of the organisation (Bohlander & Snell, 2013; Rothwell, 2015). The key tenets of succession planning propels an employee to grow and take up higher role within their organisation.

According to Eshiteti, Okaka, Maragia, Odera and Akerele (2013), the effects of succession planning programs on staff retention amongst sugar companies in Kenya confirms succession planning emerged as a strong factor influencing staff retention mainly through provision of employee growth opportunities and increased job satisfaction. A study by Kamande and Gachunga (2014) also mirrored the positive effect of succession planning in influencing employee performance and productivity which in return is able to retain employees. The findings of these studies showed succession planning had positive effect on employee retention.

Work Life Balance and Employee Retention

Work life balance metaphor originated from Western however, is yet to become a genuine priority to many organisations despite its importance and benefits (Subramaniam, Overton & Maniam, 2015). Past researchers have identified work life balance as an important element to improve employee retention (Richman, Civian, Shannon, Hill & Brennan, 2008; Benito-Osorio, Munoz-Aguado & Villar, 2014).

A study by Cegarra-Leiva, Sanchez-Vidal and Cegarra-Navarra (2012) among 148 managerial employees based Spanish Metal Industry SMEs revealed work life balance leads to job satisfaction which increases employee retention. In a similar vein, a study amongst artisan in fast moving consumer goods manufacturers (FMCG) in South Africa depicted work life balance had the largest positive impact on employee retention (Schlechter, Faught & Bussin, 2014). Consistently, 550 respondents from the ceramic manufacturing industry in India stated that work life balance practices had positively related to employee retention (Umamaheswari & Krishnan, 2015).

In addition, Gholipour, Bod, Zehtabi, Pirannejad and Kozekanan (2010) stated Generation Y prefer flexible work schedules which will be able to support their demand of work life balance. In a survey conducted by Randstad Award among 200,000 respondents from different age groups and education levels worldwide fully supported the emergence of work life balance as a top priority especially for Generation Y around the world (The STAR, 2016). A healthy balance between work and life ranks is more important than financial reward. Generation Y desires to have a more balanced schedule and more time for themselves (Harrington & Ladge, 2009).

Generation Y Work Values'

Mathematically, generation relates to the year of birth and age of an individual. Age is the key demographic determinant of generation membership (Costanza & Finkelstein, 2015) whereas Mannheim (1952) argued generation cannot be easily linked to the unit of time such as birth year instead it should recognize the social factor or its work values therefore postulated the qualitative definition of generation. The focus of this study will be the work values' of Generation Y. Generally, Generation Y is described as mobile, impatient, work to enjoy life, need fast progression in their career, demanding which makes them vulnerable and have higher tendency to leave their organisation and change jobs (Hurst & Good, 2009; Simoneaux & Stroud, 2010; Kaliannan & Ponnusamy, 2016).

Some past studies had contradicting outcome postulating human resource practices i.e. career development, succession planning and work life balance alone could not retain employees (Shaw et al., 2013; Queiri et al., 2015; Darkwa, Newman, Kawkab & Chowdhury, 2015; Haider et al., 2015; Yaghi, 2016). Therefore, what are the factors which could retain employees? In other words, the employee retention may not be entirely due to human resource practices instead other factors such as work values, cultural and economic factor of the employee played an important factor in employee retention. Generation work values' has impact on employee retention (Chen & Choi, 2008; Delery & Gupta, 2016; Gordon, 2017). Hence arguably, the notion of solely implementing human resource practices in order to retain employees is not enough instead there are other factors and in this context, work values which could influence the employee's decision to remain in the organisation. Additionally, we need to accept the conception that every different generation has a different need and work values which will influence their decision to remain in the organisation (Spiro, 2006).

Social Exchange Theory

The underpinning theory which is used in this study is Social Exchange Theory. This theory has relevance to employee retention and widely been used in explaining workplace relationship and interaction between an employee with its employer (Osman, Noordin, Daud, & Othman, 2015). Social Exchange Theory involves and generates unlimited obligations when an individual does another party a favour and there is an expectation of some future return (Blau, 1964). It is also accepted that the employee and employer are deemed as "two actors" in a social exchange relationship and the actions of the employer will propagate the employee's decision to stay or leave. It is asserted the norm of exchange suggest that an employee is obligated to reciprocate the good deeds of the organisation and return through their positive behavior such as to remain with the organisation. The exchange will not continue if the reciprocity is violated (Aryee, Budhwar & Chen, 2002; Bibi, Pangil & Johari, 2016).

In consequence, employee retention practice such promotion is considered as social exchange concept as employees will remain with their organisations if the management is seen to value and implement these retention practice (Eisenberger, Armeli, Rexwinkel, Lynch & Rhoades, 2001). Social Exchange Theory positively influences employee performance, commitment and retention where it explains that the stronger the relationship between employee and employer, the higher impact it has on employee's attitude and behavior which in return generates better performance, motivation and retention (Malik, Ahmad, Gomez & Ali, 2011; Avanzi, Fraccaroli, Sarchielli, Ullrich & van Dick, 2014; Karemu, Kachori, Josee & Okibo, 2014; Osman et al., 2015).

This basic tenets of this theory looks at the process of positive exchange and acceptance of human resource practices between employers and employees for mutual gain where each employee will remain in an organisation in exchange of monetary and non-monetary benefits and concurrently, organisations will expect contribution from its employees. Therefore, this positive exchange between both parties will strengthen employee retention.

FINDINGS AND DISCUSSION

Having reviewed the literature, the research framework as presented in Figure 1.1 is developed. The focus of this study i.e. Generation Y work values' (*mediating variable*) in the relationship between human resource practices i.e. career development, succession planning and work life balance (*independent variables*) and employee retention (*dependent variable*) in the electrical and electronics manufacturers.

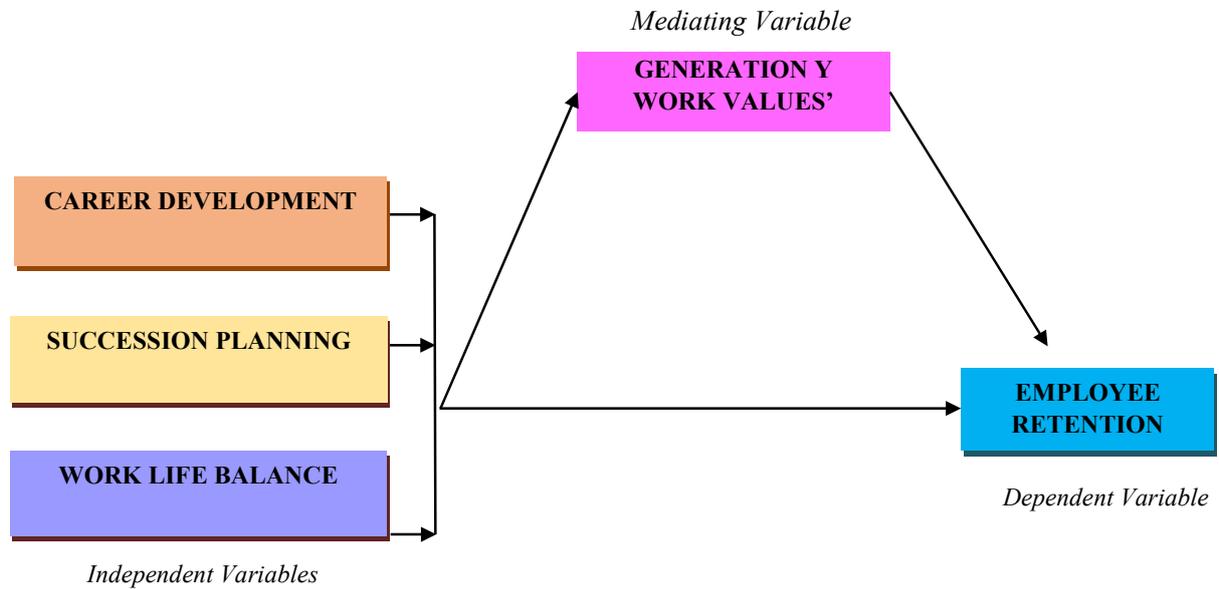


Figure 1.1: Research Framework for This Study

METHODOLOGY

The population of this study will be individuals employed in the electrical and electronics manufacturing organisations. A mixed method research will be used and integrates the quantitative and qualitative research with the aim to provide a more complete understanding of the research problem. For the context of this study, explanatory sequential mixed method will be adopted and as stated by Creswell (2014), the study will start with quantitative research method executing a survey via questionnaire, analyzes the results and then builds on the results from questionnaire to explain further with qualitative research which will be conducted through interviews. Additionally, Structural Equation Modelling (SEM), the more advanced data analysis technique will be used to examine the complex relationship in view of the convergence of mediating variable in addition to independent variables and dependent variable.

SUMMARY

The electrical and electronic industry contributes significantly to Malaysia's economy. Therefore, this industry will require employees as their prime resource to manufacture the electrical and electronics products. One key concern and challenge i.e. low employee retention or in other words, high employee turnover had emerged within organisations over the past two decades. This challenge is extremely pertinent in Malaysia specifically and across the globe generally.

Serious cost and organisation negative implications arising out of low employee retention is detrimental to organisation. Henceforth, organisations will have to propensity their strategy and be innovative to stem problems arising from low employee retention. One of the noteworthy efforts to improve low

employee retention is by implementing human resource practices since past researchers have established human resource practices is able to increase employee retention. The pressing question will then be which specific human resource practice or practices will be able to retain employees. Many previous studies have argued compensation to be no longer the sole human resource practice to retain employees in organisations instead non-monetary human resource practices have proven to retain employees. Therefore, organisations should implement non-monetary human resource practices such as career development, succession planning and work life balance which are embedded as effective human resource practices with the aim to retain their employees.

However, employee retention may still remain as a complex phenomenon despite implementing non-monetary human resource practices in organisations. This is inconsideration of the composition of workforce in Malaysian organisations with dramatic changes of the workforce landscape in view of the retirement of many Baby Boomers (*born between 1945 to 1964*), less relevant and semi-retired Generation X (*born between 1965 to 1979*) and surge of Generation Y (*born between 1980 to 1999*) who form more than 50% of the total workforce. Generation Y employees are seen as less loyal to organisation with higher tendency to leave their organisation thus leading to lower retention rate compared to their predecessor generations. They have different and unique work values and these work values could mediate the work outcome such as employee retention in the organisation.

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ONLINE EXAMINATION FOR TAKAFUL BASIC EXAMINATION – A LICENSE TO PRACTICE CERTIFICATE: A MALAYSIAN CASE

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ABSTRACT

The purpose of this study is to examine the extent of effectiveness of the online examination using electronic learning management system (e-LMS) services in the Malaysian Takaful sector for Takaful Basic Examination (TBE). TBE is conducted through online examination which is a web-based examination system (ES). The TBE is an entry qualification for all those who intend to become registered takaful agents in the financial services industry promoting takaful products and services. The term Takaful refers to the concept of Islamic insurance based on mutual cooperation, where both risks and funds are shared between the insured and insurer. TBE is a mandatory license-to-practice qualification to enhance the competency and professionalism of takaful agents. It is also an induction for individuals who intend to pursue a career in Takaful. The study also aims to address issues concerning quality of services by focusing on the following: ease of use, information security and reliability and its role in influencing customer adoption of electronic services, as well as the mechanisms of monitoring and control over these services. The research employed the analytic and descriptive methodology, by collecting secondary data on candidates sitting for the examination. This was then compared to the passing rate from the year 2012 until 2016. The findings show that online examinations have succeeded in attaining significant customer satisfaction by improving electronic services, facilitating electronic transactions, improving processing performance and enhancing the specifications of electronic services. In addition, the Takaful institutions have achieved effective communication with their customers as well as speeding up of applications. However, there is an absence of awareness and guidance for candidates about the e-examination system. The results of this research led to some recommendations to improve the electronic services provided by Takaful institutions in order to enhance customer and institution's satisfaction.

Keywords: *Takaful, e-LMS, Online Examination*

INTRODUCTION

A learning management system (LMS) is a software application for the administration, documentation, monitoring, reporting and delivery of training courses and training programmes, learning and development, including assessment, test and examination. The LMS concept is a direct result of e-learning, i.e. e-learning and hence e-LMS.

e-LMS was designed to identify training and learning gaps using analytical data and reports. e-LMS are focused on providing e-learning, but support a range of uses, acting as a platform for online content, including both asynchronous and synchronous courses. An e-LMS may offer classroom management for instructor-led training or a virtual classroom, used in higher education as well as in the corporate space. An e-LMS delivers and manages all types of content, including video, courses, and documents. In the training and talent management market, an e-LMS will include a variety of functionality have features such as rubrics, teacher and instructor facilitated learning, a discussion board, and often the use of a syllabus or course to give learners an overview of topics covered. e-LMS brings together virtual, classroom, mobile, social and e-commerce capabilities on a single, secure and scalable platform that can meet the training needs of any organisation. Therefore, we observed that e-LMS is used for employees training, customer training, compliance training and partner training. e-LMS that strictly focuses on online examination is known as online examination system (OES). OES is a web-based online examination system that runs over the internet or intranet, through a computer system. The primary goal of this OES is to effectively evaluate the learner through a fully automated system that not only reduces the time required, but also provides fast and accurate results.

The review of the Takaful Basic Examination (TBE) online examination project is very useful for this study. According to the current requirements of the OES, it is very important for the educational institution to prepare the examination, which saves the time and effort required to review and prepare the results reports. OES helps the learning institutions to monitor their learners and their progress because it helps in managing the examinations and obtain the results in an easy and efficient manner. One aspect of this study is based on the practical experiences gained in the implementation of this TBE online examination solution proposed by Islamic Banking and Institute Malaysia (IBFIM) and endorsed by the Malaysian Takaful Association (MTA) as compulsory certificate for Takaful agents. Experimenting with TBE, a survey was conducted on participating learners, which revealed their general attitudes, concerns, technical barriers, and suggestions for improving online examinations. Our findings include several implications for modern online testing and the successful implementation of online assessments in a corporate environment. This article therefore discusses the current state of online examinations and associated didactic implications, describes the functionality of TBE, including security, privacy and organisational characteristics, and discusses the results of the investigation, taking into account future research directions.

The OES system is subdivided into two main subsystems i.e. learner and administrator, designed to provide the system with maximum benefit by carefully displaying each subsystem service. The administrator's functions are clearly identified in order to manipulate user information such as adding, saving and deleting users as well as managing examination material and content such as adding and deletion of questions. OES is therefore, simple and flexible because the maintenance and development criteria of each subsystem can be treated separately without influencing another system.

The course builder (CB), in this case is IBFIM can give proctored online examinations by setting up CB's examination in a computer lab for example, where CB can supervise the learners. Learners can also take their examination in proctored company or office, using proctored devices, in this case are the Open University Malaysia's Learning Centres. Non-proctored examination can be shared with a link and taken in any device (personal or not) connected to the Internet. It allows more flexibility and self-paced learning. Learners can choose the option that suits them best.

Online examinations are a great solution, without a doubt. This saves a lot of time and money for the Takaful operators and learners. It allows people from different places to take the examination at the same time. The problem is how, as a teacher/recruiter/trainer, can you ensure that your users did not cheat when they passed your unproctored examinations? Though, it has been perceived that online testing increases the risk of cheating over paper testing, what can CB do to prevent learners from cheating online? To completely prevent learners from cheating seems to be impossible with all the advanced technologies used today. Following are some tips and tricks that will help CB prevent cheating:

- Randomise questions: with online examinations, it is possible to create a question bank and have the system extract a certain number of questions from it. So, every time someone takes CB's examination, they will obtain a different set of randomised questions.
- Set timer: One solution for this is to set a timer. CB can set a timer for the entire examination or question. An automated stopwatch would not be necessary if the CB or supervised administrator is physically present to monitor the learners.
- Use problem-solving questions: the answers to these questions require cognitive thinking and are difficult to find in a manual or on the internet.

Software Requirements to Create and Take an Examination

In fact, CB only needs a laptop or a personal computer (PC) with a browser and an internet connection. These are not heavy computers, but desktops or laptops at home or at work will suffice. CB supports all modern browsers. So, CB does not mind if the proctor uses an Apple computer or a regular PC, and CB does not bother if the proctor prefers Chrome, Safari, Firefox or Internet Explorer (10 or above). Learners do not need to install an application. OES still in the testing stages whereby the learners are able to take the examination on almost any device with an internet connection and a browser, be it a mobile phone, tablet, laptop or PC.

Takaful Basic Examination (TBE)

Effective April 2012, IBFIM has been mandated by the Malaysian Takaful Association (MTA) to conduct the Takaful Basic Examination (TBE). A mandatory examination by Takaful agent in Malaysia. The individual must pass the TBE organised by Islamic Banking and Financial Institute Malaysia (IBFIM) and the registration can be made through any Takaful Operator (TO). The registration depends on the TBE route¹ taken by the individual. It is a compulsory qualification to enhance the competency and professionalism of takaful agents. Upon completion of the TBE, candidates are expected to be conversant with the Takaful concepts and operations of Family Takaful and General Takaful, Shariah issues on Takaful, Takaful products and ethical practices in Takaful business.

¹The route as below:

- Part A + C = Basic + Family
- Part A + B = Basic + General
- Part B = General
- Part C = Family

In order to register with the TO, the individual must pass either 1 of the examination routes which are Part A + C or Part A + B. Then only they can sit for Part B or Part C and register with the TO.

PROBLEM STATEMENT

Middle East Insurance Review (11/10/2013) quoted that the average annual income of a full-time insurance agent in Malaysia has increased by 40 percent to MYR 91,000 in 2012 from MYR 65,000 in 2002. At the same time, the number of full-time agents grew in proportion to the total number of agents, from 23 percent in 2002 to 39 percent in 2013. MTA validated that the increased in the registration of Takaful agents from 3,900 in 2012 to more than 11,000 in 2016 shows that Malaysians have accepted the career path in Takaful industry, irrespective of the age, education, race, and gender, as a lucrative income benefactor. It shows that there are factors affecting agents, monetary, age and race motivation and job satisfaction in Takaful industry.

To cater for the demand for the registered Takaful agents, MTA and IBFIM has developed a TBE, a pilot project which was launched in April 2012 to implement the TBE for online testing with the objective of providing up-to-date testing methods that go hand-in-hand with the blended learning strategies in operation. The implemented learning management system (LMS) developed by METEOR on OES was initially called Online Examination, Management and Administration System (EMAS).

Online examination are usually conducted in computer rooms that are provided by Open University Malaysia nationwide that can run concurrent TBE on OES. The fact that on-site computer rooms severely restrict the number of learners for synchronous testing (a maximum 15-40 learners per run per OUM Learning Centre) was an important motivator for developing the system. Currently there are 34 OUM Learning Centres nationwide in Malaysia.

The study suggest that online examination is more appropriate for mass creation of Takaful agents in Takaful related industry.

OBJECTIVE OF THE STUDY

The objective of this study is to determine the influence of demographic characteristics in taking the TBE license to practice certification assessment to qualify to enroll as a Takaful agent in Takaful industry in Malaysia. The study suggests that the online examination is more suitable for mass creation of insurance agents in the insurance industry.

Significance of the Study

The findings of this study is insightful in enhancing policy formulation with regard to management of performance among employees as it will add the demographic characteristics as one of the factors under considerations in performance management. Many policy formulators will find this study useful in that a silent aspect of employee management will be brought into the limelight. The ideas postulated in this research is therefore be resourceful to relevant policy makers either as they are or as a guide to further exploration of related issues in managing performance.

Secondly, the study contributes to the existing literature, and is therefore be of value for further research by either validating or disputing the existing ideas about the influence of demographic characteristics on employee or Takaful agent performance. The results are also insightful to human resource practitioners as far as performance management is concerned. The management of employee or Takaful agent performance will be enhanced by the findings of this research.

A recent research study has stated, "...there is also a clear need for further studies investigating learners' attitudes, perceptions and preferences in relation to online assessment methods..." (Hewson, 2012). Our study contributes to current research in this vein by providing some additional insights concerning learner attitudes related to online testing.

LITERATURE REVIEW

Motivation is one of the most important factors affecting human behaviour, job satisfaction and performance (Malik, 2010) and efficiency and productivity (Kamaluddin et al., 2011). Job satisfaction plays a vital role in organisational performance and success (Bashir, Liao, Zhao, Ghazanfar, & Khan 2011; Tan & Waheed, 2011). Because of its importance, for the last two decades, numerous researchers have undertaken studies to understand factors that affect employees' job satisfaction (Paul, 2012).

Literature suggests and empirical evidences show that motivated employees are related to high level of job satisfaction (Zaidi & Abbas, 2011) and performance (Sharma & Bajpai, 2011) and employees are also more likely to stay in the company (Dhiman & Mohanty, 2010; HR Matters, 2012). Demographic characteristics greatly influence how well an employee performs despite the fact that the employee might be having other factors determining their performance. Managing Demographic characteristics in the workplace should be the concern of every organisation. In order to survive, an organisation needs to be able to manage and utilize its demographic workplace effectively. Managing demographic in the workplace should be a part of the culture of the entire organisation (Anderson, 2012).

Takaful agent has become a challenging phenomenon for both public and private organisations related to Takaful coverage. The nature of Takaful agents' demography varies in terms of level of education, age, marital status, gender and tenure at the organisation. Munjuri (2012) and Kuya(2013) conducted a study on influence of demographic characteristics on employee performance in banking sector and established that demographic characteristics have an impact on how well an employee performs, they ought to be emphasised in the management of perform. It was concluded that workforce diversity affects employee job performance and affect employees performance at varying degrees considering both managers and no managerial employees of a Bank. Concerning the effect of gender on the relationship between monetary motivation and job satisfaction, Adeogun (2008) and Okpara (2006) found that gender has significant effect.

Online examination system saves the examination information in a database, and this make it an easier solution to the instructor to add their examination results in a totally automated system.

METHODOLOGY

Data was collected from the year IBFIM offered TBE, which is from 2012 through 2016 using the online examination. These figures indicate a significant increase in the number of online examination and thus increased interest in online assessment methods at IBFIM on TBE. Results of the TBE candidates from year 2012 through 2016, including the number of candidates registered for the TBE, gender, exam results, and race were tabulated for analysis.

FINDINGS AND DISCUSSION

The first sections of the analyses assessed learners' attitudes towards online examination in general. We identified learner responses according to year of assessment, gender, race, age, passed and fail, in order to refine the analysis (Figure 1).

Year	2012	2013	2014	2015	2016
Registered	9503	16901	16300	17584	18372
Passed	3965	9081	10865	10743	11140
Failed	3933	5002	2820	4137	4309
Male	942	1289	1318	889	1070
Female	8561	15612	14982	16695	17302
Chinese	4199	7490	5939	4705	4448
Indian	662	1031	970	940	1188
Malay	12882	24070	24677	27620	30209
Other Races	381	920	899	1136	1824
Age Category					
18-21	1	50	321	883	2311
22-25	962	3329	4874	7211	9574
26-29	4150	8817	8385	9099	8843
30-34	5414	9158	7759	7341	7346
35-39	3211	5299	4453	4182	4143
40-44	1936	3069	2778	2437	2464
45-49	1213	2064	2222	1951	1855
50-54	640	1073	997	750	722
55-59	311	594	485	393	327
60 and above	206	355	211	154	84

Figure 1: Excerpt from IBFIM’s TBE Online Examination System

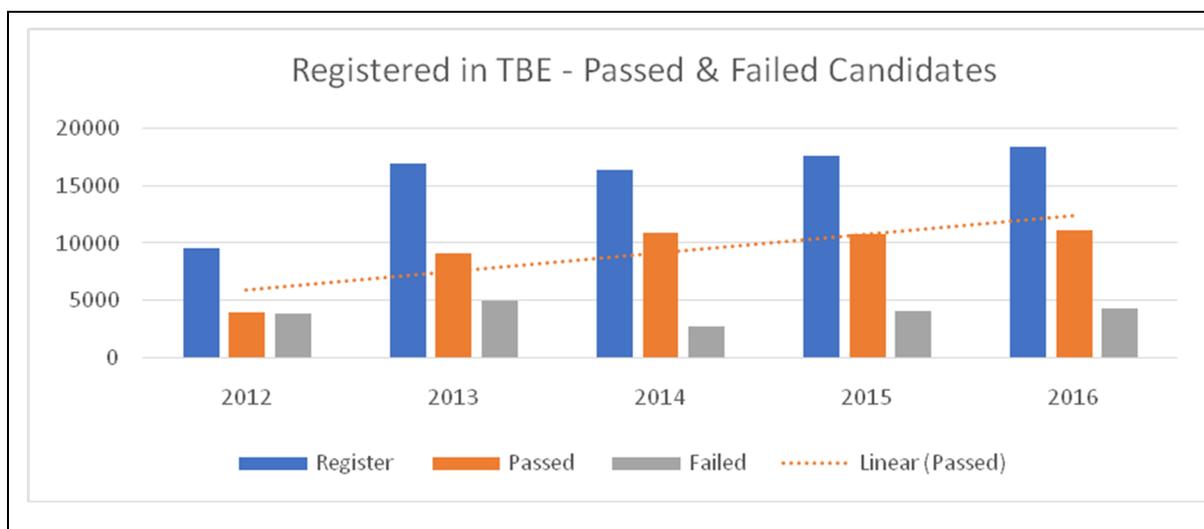




Figure 2: TBE and Achievement According to Demographic

Between 2012 and 2013, student enrolments increased to almost 94%. The reasons being the incentives of the government in promoting Takaful industry and the open opportunity to the Takaful agents to develop their career path in the industry. Because of its importance, for the last two decades, numerous researchers have undertaken studies to understand factors that affect employees' job satisfaction in their career (Paul, 2012). With regards to the effect of gender on the relationship between monetary

motivation and job satisfaction, some researchers (Adeogun, 2008; Okpara, 2006) found that gender has significant effect on the relationship while others (Choudhury & Mishra, 2011; Toker, 2011) reported no significant effect. Ghazzawi (2010) conducted a study to determine gender role in job satisfaction. Study outcomes suggested that gender did not play a role in job satisfaction among IT professionals in the United States.

This study findings indicated that the passing rate for the year 2012 of the TBE was 41.7% mainly due to the familiarization of the terminology and modus operandi of the Takaful related processes and products features. Starting from 2013, the passing rate of TBE improved reaching more than 50% of passed candidates and the growth of passes remain steady at 6% yearly. More female candidates passed the assessment as compared to the males with a wide gap of almost 80%.

According to Bashir et al. (2011), compensation/pay was also reported as one of the important aspects of job satisfaction. Adeogun (2008) reported that money as a motivator increases job satisfaction of employees at multicultural for-profit institutions of higher learning in the US. Similarly, Mustapha (2013) reported a positive relationship ($r = .206, p = .000$) between financial reward and job satisfaction. The perceptions of being Takaful agents can generate lucrative income has motivated them to enroll for the TBE certification. The argument put forward by Tang et al. appears to receive support from Tan and Waheed (2011), who found that the love of money moderates job satisfaction of employees in the Malaysian retail sector.

It is observed that the employment landscape has changed dramatically for women in recent decades - with an even greater transformation under way. The global market, skilled labour shortages in sectors such as financial advisers, financial planners, marketing and ICT, as well as expert predictions that jobs requiring deeply human skills (empathy, kindness, creativity and ability to adaptation are traditionally regarded as feminine traits). Age bracket of 23-35 are the most active dominion in obtaining TBE certificate. Talking about race, the Malays scored the highest in obtaining TBE, whilst Chinese ranked second and Indians third.

Factors that Contribute to Students Positive and Negative Experience

The purpose of this study is to examine students' perceptions towards the online examination based upon the online learning experiences they had. The factors which shaped those students' online education experiences have also been investigated.

The findings from this research are grouped into two clusters: students' positive experiences and negative experiences. The students' positive experiences were flexibility, cost-effectiveness, electronic research availability, and ease of connection to the internet. The students' negative experiences were identified as: delayed feedback from instructors, unavailable technical support from instructor, lack of self-regulation and self-motivation, and the sense of isolation.

Factors that contributed to students' positive experiences were flexibility of class participation time and self-paced study, cost-effectiveness of online class, electronic research availability, well-designed course layout, ease connection of the Internet, easy navigation of the online class interface, and familiarity with the instructor.

Factors that contributed to student' negative experiences were delayed feedback from instructor; unavailable technical support from instructor, lack of self-regulation and self-motivation, sense of isolation, monotonous instructional methods, and poorly-designed course content.

Pedagogical Implications

Online testing has pedagogical implications given its immense potential. First, in-depth knowledge can be assessed with correctly designed multiple-choice questions. Secondly, online examinations are superior in evaluating individual performance. Individualized examination are becoming a central topic in education (Elliott, 2008) and thus, "...e-assessment's most exciting use is in assessing functioning knowledge. Complex real-life situations can be given in multimedia presentations and learners asked to respond" (Biggs and Tang, 2011).

Other important pedagogical aspects include the opportunity for feedback that online examination offer individualized or mass automated feedback providing the learners with the opportunity to obtain valuable information which they otherwise would not have received (with paper-and-pencil tests). Constructive feedback as well as immediate results support learners in detecting deficiencies and fostering learning to improve performance (Marriott, 2009).

CONCLUSION

There are a lot of reasons why Takaful institutions want to use the online examination, but the main reason is, by far, the benefits we can get from an online examination system, instead of the good old-fashioned paper examination. An online examination system has many advantages: we never have to print the examination questions for our students and distribute them. It saves time. We can configure an examination that is enabled to auto-grade. If we only use multiple choice questions, we never have to review an examination question again. The online examination system will take care of that hassle. Completely automated. It saves more time. For distribution, just upload the email addresses of our students and send them an invite. And after the examination, they may get their result instantly, if we choose to do so. It is more secured. We can develop question bank with a pool of questions. Every student gets a random selection from that question bank. Result analysis is easy and instant. Online examination can provide detailed analytics, ratios, ranking, and subject or topic wise analysis. It is helpful for further decision making or shortlisting process. Online examination provides flexibility of defining a question paper, there can be same or different question paper for each student based on the examination syllabus or topics. It can eliminate malpractices in examination process.

As the Takaful industry increasingly taking innovative steps to improvise their marketing efforts, the introduction of Wakalah system (agency system) is further enhanced. Takaful agents not only oblige to sell Takaful products, but they are also responsible for the education of the public regarding the purpose and importance of Takaful products. Without excellent and proper understanding, the Takaful agents would fail to fulfil the responsibility to market the Takaful products. According to Elliott (2008), it is now necessary to put a greater role on e-learning and advance towards personalized learning and assessment.

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TOWARDS 21ST CENTURY ASSESSMENT IN OPEN AND DISTANCE EDUCATION: A CASE STUDY AT HANOI OPEN UNIVERSITY

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ABSTRACT

Global movements have led to the national curriculum reforms in higher education generally and in open and distance education particularly to ensure quality education for all and promote lifelong learning. A wide range of students' competencies namely communication, creativity, critical thinking and problem solving are regarded to be the essential skills for the 21st century students to thrive in the highly-competitive working environment. Open universities in Vietnam, especially Hanoi Open University have tried their best to improve training quality and the scale of open and distance education to meet the increasing demand for a more skilled and productive workforce. Along with the new innovation in online teaching and learning methods, training curricula, learning models and learning analytics; an extensive reform in assessment is required to enhance the quality of open and distance e-learning as well. This paper aims at identifying the real situation of assessment in online open and distance training at Hanoi Open University. Basing on the analyses of the strengths and weaknesses of assessment in online open and distance training at Hanoi Open University, the paper will propose some recommendations for appropriate online assessment for evaluating students' skills at Hanoi Open University in the 21st century. Besides, this paper will provide some suggestions for preparation for assessment practices in terms of technology, instructors and students to enhance the quality and effectiveness of online open and distance training in the integration era.

Keywords: *Online Assessment, 21st-Century Students' Skills, Technology, Instructors, Students*

INTRODUCTION

In the Industrial Revolution 4.0 era, the growth of open and distance e-learning (ODeL) has required an intensive innovation in evaluation and assessment to make sure that open and distance training meets the courses' training objectives. Timely feedback of students' academic performances during the teaching and learning processes have become a decisive factor to enhance the training quality and effectiveness of ODeL and as a result to facilitate them to learn more actively and effectively.

ODeL institutions aim not only at providing students with professional knowledge and skills to meet the courses' requirements but also at building capacities for present and future labour force. Therefore, it is essential for ODeL educators to address the real situations of the 21st century training with much focus on vital role of assessment to assure open and distance training to meet the courses' requirements. The paper's objective is to assess the effectiveness of current assessment in ODeL at Hanoi Open University (HOU) and identify the areas which need improvements to enhance the training quality and effectiveness and provide some suggestions for preparation for appropriate online assessment practices in terms of technology, instructors and students.

21st – CENTURY ASSESSMENT IN OPEN AND DISTANCE EDUCATION

Recent and rapid development of ODeL in the twenty-first century raises the questions whether assessment practices have kept up with new applications of communications technologies in ODeL and with the ever-increasing educational requirements of a learning society in the twenty-first century or not. It is essential for open and distance educators to focus on distance education shifting from the mass production and learning package delivery to educational issues. These issues relate to the transaction of teaching-learning process and the concerns of real communication and communication technologies to support sustained communication regardless time and place.

In order to respond to the requirements for the complex skills of the 21st century labor force known as communication, collaboration, problems solving and critical thinking, ODeL institutions need to enhance training curriculums with much focus on learning progressions as road map to the 21st century education. In other words, ODeL institutions should pay much attention to guiding students the way how to mastery the skills in specific fields rather than the learning outcomes in terms of standard tests' scores (Helyn, K. and Clare, S., 2017). To evaluate complex skills on the fundamental ones in learning progressions, ODeL institutions should take account in teaching practices and assessments to outline expected learning outcomes relating to the skills from the beginning level to the expert one.

Information and instrument of Communication Technologies co-operate in online education and training to build new paths and to create effective methods for ODeL institutions to deliver open and distance courses. These online courses require a relevant application of high technologies in assessing students' learning outcomes to work smoothly. An online Examination System is considered a powerful tool for students to access courses' requirements in terms of checking exam schedules, responding to exams and making progress.

The challenges facing assessment in ODeL are identified as a strategy for the development of appropriate assessment practices which engage students in self-assessment and peer one to promote their confidence to understand how they learn. This develops students' abilities in building the learning plan for their future learning goals, improves students' skills of lifelong learning and supports them in assessing their academic performances. Therefore, it is essential for ODeL to work hard to enhance the current assessment practices in open and distance training in terms of technology, instructors and students.

LITERATURE REVIEW

The technology development and Internet application in virtual open and distance learning environment lead to the requirements for authentic assessment which addresses the realities resulted from potentially technology-driven, web-based and massive training situations. Measuring tools must be qualified to gather the data about students' learning feedbacks. The better measuring instrument is, the more reliable judgment on the learning progress students gets.

According to Crisp, G. T. (2012), the twenty first-century assessment needs to focus both on current learning assessment and future one. Assessment of current learning is done via formative and summative assessments to make sure students have gained specific courses' learning objectives while assessment of future learning concerns higher levels of academic performances and requirements for integrative assessments which ensure students can meet the society's needs in the future.

Formative assessment known as assessment for learning and assessment as learning aims at judging students' targeted learning outcomes, creating learning opportunities and promoting self-directed learning for them. Arend, B. (2007) suggested several types of online assessment methods namely tests and quizzes, projects, group-works, online discussion, presentations. Besides, Gaytan, J. et. al (2007) identified some effective practices of online assessment such as portfolios, self-assessment, peer

evaluations and timed tests. These kinds of formative assessment are very useful for supporting students in evaluating their learning achievements.

Summative assessment regarded as assessment of learning overviews students' academic performances after a previous study period for the future plan of learning outcome targets. According to Arend, B. (2007), online assessment methods can include final examinations, written assignments, experimental assignments, presentations and projects. Summative assessment demonstrates the extent of the learning goals and the standards students have gained. This assessment allows students to show what they know and can do at the end of a program, a semester or a year of study.

Integrative assessment regarded as assessment of future learning uses various methods of assessment to gather the feedbacks on students' capacities. This kind of assessment enables students to demonstrate their knowledge and skills into practice for the future learning and working situations by associating strategies, replying on real tasks and situations (Crisp, G. T., 2012). Integrative assessment enables students to judge their performances via review and comments, to identify expectations and standards in their replies, to follow and analyze their ways to solve problems, to associate previous and present feedbacks in their responses and to involve in meaningful and worthy activities rather than simple assessment ones. Some effective examples of integrative assessment are e-portfolio, blogs and wiki which pay much attention to the quality of learning approach analysis, showing students what they have learnt to meet the course's criteria or not.

According to Sheila, R. B. (2018), some integrative assessment approaches comprise authentic assessment known as projects, reports, journals, speeches, videos and interviews which enable students to demonstrate their knowledge creatively. Besides, authentic assessment is really useful for group work in terms of co-operating experience on projects with others and of making a reflection on the given missions, which enhances students' writing and oral presentation skills.

From the viewpoint of Alfonso, G. (2017), ODeL should develop an online exam system to synchronize with the online teaching and learning system. An online platform such as email, Skype, Google Hangout, and GoogleDocs with the use of an internet and a webcam is fundamental for establishing an online exam system. Some effective features of online exam system are known as "the Student View, Time Zone Scheduling, Exam Schedule E-notification, and Image Capture and Psychometric Analysis". To put an online exam system into practices, the technology system access should comprise the "Administrator Access, Faculty Access, Proctor Access and Student Access". Administrator Access refers monitoring the overall features specified and the system maintenance. Faculty Access involves adding or editing exam schedules and exams, modifying or deleting examinees, assigning proctors, viewing exam results, locking or unlocking exams. Proctor Access concerns locking or unlocking exams. Student Access views exam schedules and respond to the exam questions.

In the opinion of Jean, A., et. al (2018), the data relating exam administration are collected via an assessment team which includes a team leader, an assessment expert, technical experts and a faculty-in-charge. The team leader has responsibility for initiating online assessment system, cooperating workforces and directing progress of the system. The assessment expert is in charge of making sure the principles of assessment work. The technical experts are responsible for developing the system of e-assessment and for providing comments and technical feedbacks. The faculty-in-charge has a close relation with learners and responsibility for pilot tests on the system and collecting learning feedbacks.

According to Melinda, D. B. (2018), online examination system addresses certain requirements. First, camera's installation is essential for ascertaining students' identity. Second, the maximum number of examinees monitored by a proctor in each session should be identified. Third, a community site for offshore students needs to be created to serve as a venue for sending announcements, providing messages and socializing with other people. Fourth, an exam portal and procedures should be developed to prevent cheating and dishonest behaviors during the online exams. Last but not least, online exam proctors and students should be trained.

CURRENT ASSESSMENT IN OPEN AND EDUCATION AT HOU

Hanoi Open University offers open and distance learning (ODL) programs for Bachelor's Degree with online and face-to-face training modes. E-Learning Training center is responsible for online distance training mode while face-to-face training mode is controlled by the faculty of Distance Training.

The mechanism of assessment of these two training units involves the same features in terms of categorizing into formative and summative assessment. Besides, summative examinations are organized by the training units and administered under university's control in the form of paper-based multiple-choice and essay tests at the end of the semester. However, the two training modes concern different features in formative assessment. E-Learning Training center controls formative assessment by uploading the system of exercises and questions online while teachers are responsible for carrying out formative assessment and giving marks during the teaching-learning process in the faculty of Distance Training.

In order to improve the quality of evaluation and assessment practices in online open and distance training, HOU should identify and analyze strengths and weaknesses of assessment practices in online distance training. Basing on that, HOU can propose appropriate online assessment practices in the coming century. The shortcomings of the current assessment in online and distance training at HOU are identified as followed.

Regarding technology, assisted technologies have just been applied in online assessment in terms of formative exams. However, HOU has not built an online examination system yet for summative examinations. The fixed timetable of summative centralized paper exams does not really synchronize with the flexible online teaching and learning methods. In other words, the present methods of assessment in distance training at HOU do not actually match up with the online teaching and learning methods.

In terms of instructors, HOU has organized short courses to train instructors to apply assisted technologies to assess students' learning outcomes in terms of formative assessments. However, instructors at HOU have not professionally trained to exploit assisted technologies in assessing students' learning outcomes in terms of summative assessment. It is essential for HOU to apply its modern technology infrastructure at the end of the semester of study to assess students' academic performances, to analyze the students' learning outcomes, and to support them how to adjust their learning methods effectively.

Referring students, they are ready for online assessment in terms of technological resources and skills in general. Most students at HOU have a smart phone and an access to a computer with an internet connection at home and at work. Besides, all of them can easily access internet services outside university. However, there are some areas which need improving in terms of skills. Students' skills in using social network tools namely Facebook, Zalo, Viber, Messenger or Line should be enhanced. The students are not familiar to these types of communication because of geographical places. In addition, most students are not ICT generation. Though these skills are not difficult to enhance, students should acknowledge that their overall communication quality will depend on their abilities of accessing and exploiting internet services for respond to their assessment tasks.

RECOMMENDATION FOR 21st ASSESSMENT IN DISTANCE EDUCATION AT HOU

The renovation in e-learning education to produce well-qualified, competent and dynamic graduates should go along with online assessment reformation because this enables graduates to meet the changing requirements of the society for capable workforces. In order to enhance the assessment quality of online open and distance training, HOU should develop long-term assessment strategies to exploit the advanced technologies in assessing online students' learning outcomes via implementing the following things.

In terms of technology, HOU should exploit the modern technology infrastructure of KOICA (Korean International Cooperation Agency) project for upgrading infrastructure for e-learning at HOU and building an online assessment system. This system should rely on a online platform such as email, Skype, Google Hangout, and GoogleDocs with the use of an internet and a webcam. The online assessment system will make online assessment work synchronously and systematically with online teaching and learning methods. HOU should ensure that the technology system access comprises administrator access, faculty access, proctor access and student access work in combination effectively.

Referring instructors, it is essential for HOU to organize short courses to provide online instructors such as team leader, an assessment expert, technical experts and a faculty-in-charge with necessary knowledge and skills to operate the online assessment system in not only formative assessment but also in summarative one to go smoothly. All these kinds of instructors should be skilled in guiding students how to join the online assessment system via sending announcements, providing messages and socializing with other students.

Concerning students, HOU should provide students with some lessons at the beginning of e-learning courses so that students can be familiar with the skills in using social network tools such as Facebook, Zalo, Viber, Messenger or Line. Besides, students should be provided with other skills to exploit the learning materials, to access the assessment system, to use assessment feedbacks so that they can adjust their learning methods. The faculty-in-charge should establish a close relationship with their online students to support them to access the online assessment system in terms of downloading online examination schedules, revising materials for exams, responding to exam questions, receiving learning feedbacks and comments, and following teachers' instructions on how to adjust their learning methods to meet the courses' objectives.

CONCLUSION

Improving the quality of assessment in general and of online assessment in particular to enhance open and distance training's quality is essential for HOU to build a long-life learning society. In order to make the assessment renovation in online training effective, HOU should develop an online assessment system with much focus on technology, instructors and students as a powerful tool to orientate online teachers and learners to adjust their teaching and learning activities. As a matter of a fact, a renovation in evaluation and assessment must not only guide online learners to obtain knowledge and skills to meet the courses' objectives but also to meet the changing demands for the adaptable and skillful workforce of the globalized society.

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VALIDATION OF A TWO-TIER MULTIPLE CHOICE (2TMC) DIAGNOSTIC INSTRUMENT ON THE MOLE CONCEPT AND SOLUTION CONCENTRATION: A RASCH ANALYSIS

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ABSTRACT

Mole concept and solution concentration provide a wealth of valuable information about the nature of the discipline of chemistry. Thus, dealing with the two concepts is essential for chemistry learners, but at the same time, it presents a great challenge to students due to the abstract nature of the concepts. Hence, it is not surprising that numerous studies have revealed that students have difficulties in mastering them. However, most of the studies focused on secondary students. Little is known about post-secondary science students' understanding on the mole concept and solution concentration. Therefore, this study intends to develop a two-tier multiple choice (2TMC) diagnostic instrument to ascertain students' alternative frameworks on the concepts. The 2TMC instrument was developed based on previous studies, established chemistry reference materials, chemistry curricula for Malaysian Certificate of Education (equivalent to Year 10 in US and Year 11 in UK), and annual national chemistry quiz competition organised by the Malaysian Institute of Chemistry. 132 post-secondary science students from a local private university in Malaysia took part in the study. By means of Rasch measurement, the instrument with 14 items was validated. The results show very little misfit to the Rasch model and that the level of the items' difficulty was appropriately targeted to the abilities of the test-taking population, covering a range of statistically distinct difficulties.

Keywords: *Rasch Analysis, Two Tier Multiple Choice Diagnostic Instrument, Chemistry, Item Characteristic Curve*

INTRODUCTION

Understanding chemistry is a complex human activity (Dori and Hameiri 2003) as learners must navigate concepts among three levels of representation termed by Johnstone (1993) as macroscopic, sub-microscopic and symbolic modes of representation. As beginners, students find it difficult to assess the three levels, as it involves 'multilevel thought' and it demands assimilating the three levels concurrently. Learners' inability to move within the three modes of representation always lead to rote learning and development of alternative frameworks or misconceptions about many concepts (Lu and Bi, 2016). Chandrasegaran et al. (2007) claimed that successful learning outcomes in chemistry are dependent on one's capability to conceptualise sub-micro particles comprising indescribably small molecular entities to explain tangible chemical phenomena at the macro level. The usual assessment methods are not able to provide adequately detailed information regarding students' conceptual

understanding as these assessments normally examine learners' ability to state definitions, reproduce proofs, and solve standard numerical problems (McDermott, 1991).

The mole concept is widely applied in chemistry. One of the most important applications is in stoichiometry. Stoichiometry deals with the quantitative relationship between reactants and products in chemical reactions. In addition, solution concentrations are also rooted in the mole concept. Hence, understanding the mole concept underpins a significant part of a students' learning in chemistry.

There has been a growing interest and frequent discussion among chemistry education researchers over recent decades with the teaching and learning of mole concept (Pekdağ and Azizoğlu, 2013). The very fact that so much discussion has been devoted to this concept is evidence of such essential importance of understanding the mole concept. Such studies have provided a wealth of knowledge on learning difficulties faced by students on the topic. Mole concept, as a fundamental topic in chemistry, is featured prominently in high school chemistry (Schmidt and Jignéus, 2003) and is also taught in chemistry courses at the pre-university and tertiary levels (Evans et al., 2008) and this is the case in the local Malaysian context as well. Studies abroad have often showed that many students have a weak understanding of the mole concept even after formal education (Chandrasegaran et al., 2009). A prominent educational problem inherent to this concept is the tendency of students to approach mole problem solving in an algorithmic manner without conceptual understanding and this has been indicated by past studies in which students demonstrated greater success in solving algorithmic-based mole concept problems as compared to questions which require higher-order thinking skills and conceptual understanding (BouJaoude and Barakat, 2000).

Within the local educational scene, formal chemistry lessons are first taught to Form Four science stream students (equivalent to Year 10 in US and Year 11 in UK). Upon the completion of the topic, students are expected to be able to define the meaning of mole, state the meaning of Avogadro constant; relate the number of particles in one mole of a substance with the Avogadro constant; solve numerical problems to convert the number of moles to the number of particles of a given substance and vice versa (Ministry of Education Malaysia, 2005). On the other hand, solution concentration is incorporated under the acids and bases topic. This topic is taught to Form Four science stream students as well. The learning outcomes for this concept are as follows: to state the meaning of concentration, molarity, the relationship between the number of moles with molarity and volume of a solution; describe methods for preparing standard solutions; describe the preparation of a solution with a specified concentration using dilution method; relate pH value with molarity of acid and alkali and solve numerical problems involving molarity of acids and alkalis (Ministry of Education Malaysia, 2005). When students enrol for chemistry-related programmes at tertiary level, they will encounter the two concepts again with more in-depth coverage.

Lack of conceptual understanding in the mole concept and solution concentration will hinder students' progress especially when they have to undertake final-year hands-on project and industrial training. As students will spend a large amount of time in laboratories for these two activities, the success of completing hands-on tasks very much rely on their ability to apply the mole concept and solution concentrations knowledge they have acquired in formal chemistry lessons (Berg, 2012).

Past studies have shown students face difficulties in solving mole concepts and solution concentration problems (Berg, 2012). Students' inability to master these two stoichiometric related concepts are either due to lack of knowledge or they hold alternative frameworks for these concepts.

While various studies have been carried out regarding students' conception, understanding and difficulties in the mole concept and solution concentration, most of the studies target secondary school students. Alternative frameworks uncovered for post-secondary level students in any study is relatively few. It is likely that these studies did not cover sufficient breadth and depth. Also, most of the studies are, strictly speaking, an assessment test rather than a diagnostic test. Assessment tests need a "spread of scores" to cater to the range of concepts examined, whereas for a diagnostic test, the objective is to

surface alternative frameworks, so the items used tend to probe deeper into the topic matter (Hoe and Subramaniam, 2016). Alternative frameworks held by students in these two concepts will pose as a barrier as they embark to higher level of science learning generally and chemistry specifically if they are not being rectified. In investigating students' alternative frameworks, multiple-choice questions (MCQs) are frequently being used.

Two-tier multiple choice (2TMC) questions are subsequently developed to address the weakness and have since become one of the most popular members of the family of MCQs in uncovering students' alternative frameworks. (Tsai and Chou, 2002). 2TMC tests are diagnostic instruments with first tier of the items consisting of a content question, while the second tier includes multiple-choice set of reasons for the answer to the first tier (Chandrasegaran et al., 2007). Students' answers to each item were considered correct when both the correct choice and reason are given (Gurelet al., 2015). Distractors were developed from students' responses gathered from the literatures, open-ended tests and interviews (Gurelet al., 2015). As stated by Tamir (1989), the need to select a reason in these 2TMC tests affords a sensitive and effective way of assessing meaningful learning among students. In addition, it also serves as an effective diagnostic tool (Tamir 1989). Adadan and Savasci (2012) commented that 2TMC tests are relatively convenient for students to respond to and more practical and valuable for educators to use as the instruments allow for large-scale administration, not time consuming, reducing guesswork, easy scoring and offering insights into students' justification. 2TMC tests are widely used at present (Chandrasegaran et al., 2007) since Treagust (1986) published his seminar work on the development of 2TMC test. Table 1 summarises the two-tier tests published in chemistry with their references.

Table 1: Two-tier Multiple-choice Tests in Chemistry (Gurelet al., 2015)

Test	References
Covalent Bonding and Structure Diagnostic Test	(Peterson <i>et al.</i> , 1986)
Test to Identify Student Conceptualizations (TISC) in Chemical Equilibrium	(Voska and Heikkinen, 2000)
Qualitative Analysis Diagnostic Instrument (QADI) (Inorganic Chemistry)	(Tan <i>et al.</i> , 2002)
Representational Systems and Chemical Reactions Diagnostic Instruments (RSCRDI)	(Chandrasegaran et al., 2007)
Two-tier Chemical Concepts Tests	(Chiu, 2007)
Boiling Concept Tests	(Costuet <i>et al.</i> , 2007)
Two-tier Separation of Matter Test	(Tuysuz, 2009)
Acid-Base Diagnostic Test (ABDT)	(Artdejet <i>et al.</i> , 2010)
Two-tier Chemical Equilibrium Test	(Akkuset <i>et al.</i> , 2011),
Nature of Solutions and Solubility Diagnostic Instrument (NSS-DI)	(Adadan&Savasci, 2012)

Under the assumption of unidimensionality, the performance of students on the 2TMC test is expected to be based on a single latent trait (Lu and Bi, 2016). It means that the items of a test are expected to share a single dimension that the test is proposed to measure (Tabatabaee-Yazdier et al., 2018). Another assumption of the Rasch model is local independence of the items, where the answer for one item is independent of the answers for the other items (Lu and Bi, 2012). Dichotomous models are used extensively in the education field, such as in Programme for International Student Assessment (PISA), to measure students' responses to multiple choice questions in formative and summative assessment (Liu et al., 2008; Lu and Bi, 2016). A few indicators need to be fulfilled before one can assert that an instrument employed is valid and reliable, which measures what it is supposedly to measure and the measurement to remain the same, consistently over time (Neumann et al., 2011; Boone et al., 2014). The indicators are summarized as follow:

- (a) Cronbach- α value (>0.7).
- (b) Item reliability: If the value is > 0.6 , the items asked in the instrument is sufficient for the expected range of respondents. Low reliability (<0.6) indicates that the number of items asked are insufficient to precisely to be located on the latent variable.
- (c) Person reliability: Indicates the person latent trait measures. High reliability (>0.6) shows that the persons involved in the study are reliable and vice versa. This means that if the results display high reliability, it means that the location of person along the ruler will be the same for the second time if an instrument of the same construct is taken by the same respondents.
- (d) Person separation: It is used to classify people. Low value (<1.50) implies that the instrument may not be sensitive enough to distinguish between high and low performers. The items need to be reviewed. More items might need to be added.
- (e) Item separation: This indicator is used to verify item hierarchy. Low value (<1.5) implies that the person sample is not sufficient to confirm the item difficulty hierarchy.

Although some researchers (Heet al., 2016; Lu and Bi, 2016) have employed Rasch analysis in chemistry education studies, no researchers best to the author knowledge have developed 2TMC diagnostic instrument and reported its validity and reliability using Rasch model on the mole concept and solution concentration. Downing (2006) pointed out that, an effective test development requires a systematic approach to ensure sufficient reliability and validity evidence to support the proposed inferences from the test scores. Therefore, the purpose of this study was to validate a 2TMC diagnostic instrument on the mole concept and solution concentration using Rasch measurement.

METHODOLOGY

Development of the 2TMC Instrument on the Mole Concept and Solution Concentration

The development of the 2TMC instrument were based on the review of chemistry reference books, related literatures, chemistry curricula for Malaysian Certificate of Education (equivalent to Year 10 in US and Year 11 in UK), and annual national chemistry quiz competition organized by Malaysian Institute of Chemistry. The first tier of the 2TMC items was ordinary multiple-choice questions and in the second tier which was in multiple-choice format too, asked the reasoning for the answer chosen in the first tier.

All questions and answers to the 2TMC test on the mole concept and solution concentration were content validated by three chemistry lecturers with more than 10 years of teaching experiences from a local private university. The processes of constructing the 2TMC test are as follows:

- (i) The construction of the 2TMC questions and answers began and discussion was carried out with the chemistry lecturers.
- (ii) The 2TMC questions and answers were content validated by the chemistry lecturers.
- (iii) Revision and modification of the questions and answers were carried out.
- (iv) The final version of the test (after revision and modification) was approved by the chemistry lecturers before being administered to students.

Data Collection and Sample

The revised version of the 2TMC instrument was administered to pre-university (science stream) students (n = 132) from a local private university in Malaysia. Approval from the university's research ethics committee was obtained for the conduct of this study. Students were briefed on the background information of the study. They were informed that the participation was on a voluntary basis and they could withdraw from the study at any time without any consequences. All students who agreed to participate in the study were required to sign a consent form prepared by the university's research ethics committee.

The test was supervised by chemistry lecturers teaching the participants in this study. The lecturers were briefed by the researcher of this study prior to the test. Most of the students managed to complete the test within one hour.

Analysis of the Results of the 2TMC Instrument based on Rasch Model

Coding from Students' Responses on the 2TMC Instrument

Each item of the 2TMC test included two questions. However, students' answers to each item were given only one code as shown in Table 2. For example, if a student selected A for the answer tier and C for the reason tier, the answer was coded as C. This coding was done in order to obey local independence of the items, that is, the answer for an item is not affected by the answers for the other items (Lu & Bi, 2016). For 2TMC test, the answer for the second-tier was bound to that of the first-tier. In order to obey the independence of the items, the answer of one item scored one point only in cases when both tiers' answers were correct (Lu & Bi, 2016)

Table 2: Coding from Students' Responses on the 2TMC Instrument

Responses for Answer and Reason Tier	Code	Responses for Answer and Reason Tier	Code
AA	A	CA	I
AB	B	CB	J
AC	C	CC	K
AD	D	CD	L
BA	E	DA	M
BB	F	DB	N
BC	G	DC	O
BD	H	DD	P

Validity Analysis

Fit statistics can be used to provide evidence of the validity of the 2TMC instrument since they examine how a person's response patterns match those predicted by the model (Runnels, 2012). The degree of fit is expressed quantitatively by the results of estimating how well data fit the Rasch model. (Boone et al., 2014). Fit serves as a quality control assessment of data collected. As the first step in the Rasch analysis, the fit indices were studied closely. Fit statistics of items and persons were analysed at first and misfit items or persons would be further investigated. Two types of fit statistics provided in this study included MNSQ and ZSTD. MNSQ is a chi-square calculation which measures level of association for the outfit and infit statistics. The ZSTD provides a t-test statistic measuring the

probability of the MNSQ calculation occurring by chance (Boone et al., 2014). As the ZSTD value is based on the MNSQ, as long as the MNSQ value lies within an acceptable range of fit (0.5-1.5), it is not necessarily to report ZSTD value (Linacre, 2012).

Table 3 shows the fit statistics for all items from Winsteps 4.0.1 output. The items are shown in the leftmost column, followed by the total correct responses and the total responses for each item. The 'Measure' column shows the Rasch measure for the item (in logit) and indicates the difficulty. Following this is the standard error of the difficulty measures, the MNSQ and the ZSTD for both infit and outfit, and the point-measure correlations.

Results from Table 3 show that all items have positive measure correlations which suggested that the items were measuring the construct in the same direction. All of them can be considered construct relevant.

The items shown in Table 3 are arranged from the most difficult (Q11) to the easiest (Q3). High "Measure" values mean the item is harder to answer correctly; whereas low "Measure" values indicate the item is easier to be answered correctly. All items fell within an acceptable range for MNSQ infit (0.5–1.5). This is not the case for MNSQ outfit however, where Q11 was outside of an acceptable range of 0.50-1.50. Added to that, its ZSTD outfit was also not within the acceptable range (-1.9 to 1.9), suggesting that item Q11 should be explored in more detail. Overall, despite the existence of Q11 as probable misfit item, the results showed that the instrument appeared to have performed well as a diagnostic tool. Added to that, after removing 11 out of 132 misfitting person, MNSQ outfit for Q11 was changed from 1.65 to 0.8 (not shown in Table 3) which fell within the acceptable range. The eleven person comprised of those who scored all the items correctly or wrongly and whose MNSQ outfit was outside of the upper range. MNSQ outfit was used as a reference because outfit statistic is more sensitive to outliers and high value shows underfit which indicates there is too much unexplained variance (or noise) in the data (Boone *et al.*, 2014). Person misfit is the degree of to which a person does not act in a predictable manner with regard to the difficulty ordering and spacing of items (Boone *et al.*, 2014). Persons who scored correctly and wrongly for all the items were removed because extreme high and extreme low respondents do not provide useful data that help the researcher to understand how accurately the instrument is functioning (Boone *et al.*, 2014). For example, consider a person who answers all items correctly on a test, the measurement error of the person's measurement is infinite because one knows the person knows a lot, but one has no idea how much more he or she knows (Boone *et al.*, 2014). As such, Q11 was retained based on the analysis and reasoning above.

Table 3: Item statistics for all items in descending order of Rasch measure

Item	Total score	Total count	Measure	Model S.E.	Infit MNSQ	Infit ZSTD	Outfit MNSQ	Outfit ZSTD	Point-Measure	
									Corr	Corr
Q11	29	132	1.12	0.23	1.03	0.3	1.65	2.3	0.34	0.34
Q9	38	132	0.67	0.22	1.05	0.6	1.01	0.1	0.41	0.41
Q1	44	132	0.4	0.21	1.08	0.9	1.02	0.2	0.41	0.41
Q14	48	132	0.23	0.21	1.03	0.4	1.05	0.4	0.44	0.44
Q8	49	132	0.19	0.21	1	0.1	0.92	-0.5	0.47	0.47
Q6	51	132	0.1	0.2	0.78	-2.8	0.8	-1.5	0.6	0.6
Q5	52	131	0.05	0.2	0.87	-1.6	0.89	-0.8	0.55	0.55
Q13	55	131	-0.07	0.2	1.04	0.5	1.08	0.6	0.45	0.45
Q12	56	132	-0.1	0.2	0.97	-0.3	0.91	-0.7	0.5	0.5
Q2	59	132	-0.23	0.2	0.95	-0.6	0.94	-0.4	0.51	0.51
Q4	59	132	-0.23	0.2	1.01	0.1	0.99	-0.1	0.48	0.48
Q10	65	132	-0.47	0.2	0.84	-2	0.79	-1.9	0.59	0.59
Q7	69	132	-0.63	0.2	0.99	0	0.96	-0.3	0.5	0.5
Q3	79	132	-1.04	0.21	1.31	3.2	1.5	3.2	0.28	0.28

Reliability Analysis

Reliability was evaluated to ensure the consistency of the estimated results. Separation and reliability indices for both item and person were analyzed in this study. The reliability index provided in Rasch measurement is conceptually equivalent to the Cronbach's alpha. A reliability index of at least 0.6 is desired (Boone *et al.*, 2014). Separation index which equals to the square root of reliability divided by 1 represents how well the items can distinguish persons in terms of their ability location. A separation index of 1.5 is considered an acceptable level of separation capacity for a test (Linacre, 2012; Boone *et al.*, 2014).

Rasch analysis indicated that the item reliability (0.84), person reliability (0.67; with an equivalent value of the Cronbach's α of 0.74), and item separation (2.25) for the 2TMC instrument were within the range as suggested by Boone *et al.* (2014). This showed that the instrument was sufficient for the expected range of respondents (item reliability); persons involved in the study were reliable (person reliability); person sample was sufficient to confirm the item difficulty hierarchy (item separation) (Neumann *et al.*, 2011; Boone *et al.*, 2014). Nevertheless, person separation (1.44) for this instrument implied that the instrument may not be sensitive enough to distinguish between high and low performers. More items might need to be added in the 2TMC test (Neumann *et al.*, 2011; Boone *et al.*, 2014).

Wright Map Patterns

Wright map is a graphical representation which reveals person-item mismatch patterns (Bond and Fox, 2015). The distribution of persons (on the left) and items of the 2TMC instrument (on the right) are displayed on the same logit scale (ratio-level scales). The locations of the items are derived from empirical analyses of students' data. Persons at the same position on the scale as a particular item have a 50 % chance of answering the item correctly. Questions of similar difficulty lie at the same point on the logit scale (e.g., Q8 and Q14; Q5 and Q6, Q12 and Q13; Q2 and Q4) (Fig. 1). Persons situated above an item have an even greater probability of answering the item correctly (the item is likely to be easier to answer correctly for such persons) and persons located below an item have a lower chance of being able to answer it correctly (the item is more difficult for them).

From the Wright map shown in Fig. 1, it can be seen that most of the items in the 2TMC instrument covered most of the students' abilities except that no items were able to differentiate persons located between -1 logit, -2 logit, and -3 logit. More items easier than Q3 are needed for further study. Based on the comments from three chemistry experts servicing at a local private university, Q3 belongs to level 3 (application) under Bloom's Taxonomy (Anderson *et al.*, 2002). Therefore, items from level 1 (knowledge) and level 2 (comprehension) should be added to the 2TMC instrument in the main study. Questions from level 1 and level 2 were not included in the pilot study because the main aim of developing the 2TMC instrument was to diagnose post-secondary science students' alternative frameworks on the mole concept and solution concentration. The instrument did not intend to serve as an assessment test. Therefore, the items used tend to delve rather deep into the topic matter. However, the result from the study showed that exclusion of level 1 and level 2 items did not allow the researchers to probe further for persons located below Q3. As the results indicated that students with logit below Q3 have more than 50 % chance of answering this question wrongly, so more items below the difficulty level of Q3 should be added in order to ascertain the ability of this group of persons.

As Q2 and Q4 lie at the same point on the logit scale, both questions have the same difficulty level. However, Q2 was presented in sub-microscopic form and the question focused on molecule; whereas Q4 was presented in macroscopic verbal form (traditional way) and the question focused on the mole. Therefore, these two items were retained. Similarly, as the focus of Q5 was on the mole concept related to gas and Q6 was based on the mole concept and concentration in aqueous solution which involved ions, these items were not removed although they were located at the same point on the logit scale of the Wright map. Both Q8 and Q14 were to be retained too in the 4TMC instrument although their difficulty level was similar because Q8 was related to the mole concept and solution concentration

where students need to know how to deduce the answer from the given equations given in the question. On the other hand, Q14 was presented in sub-microscopic form and related to molecules, volume and concentration. Last but not least, since Q12 focused on dilution which required students to construct a balanced equation before deducing the answer and Q13 focused on serial dilution (stepwise dilution of a substance in a solution), both questions were retained in the 2TMC instrument even though the level of difficulty was the same based on the Wright Map.

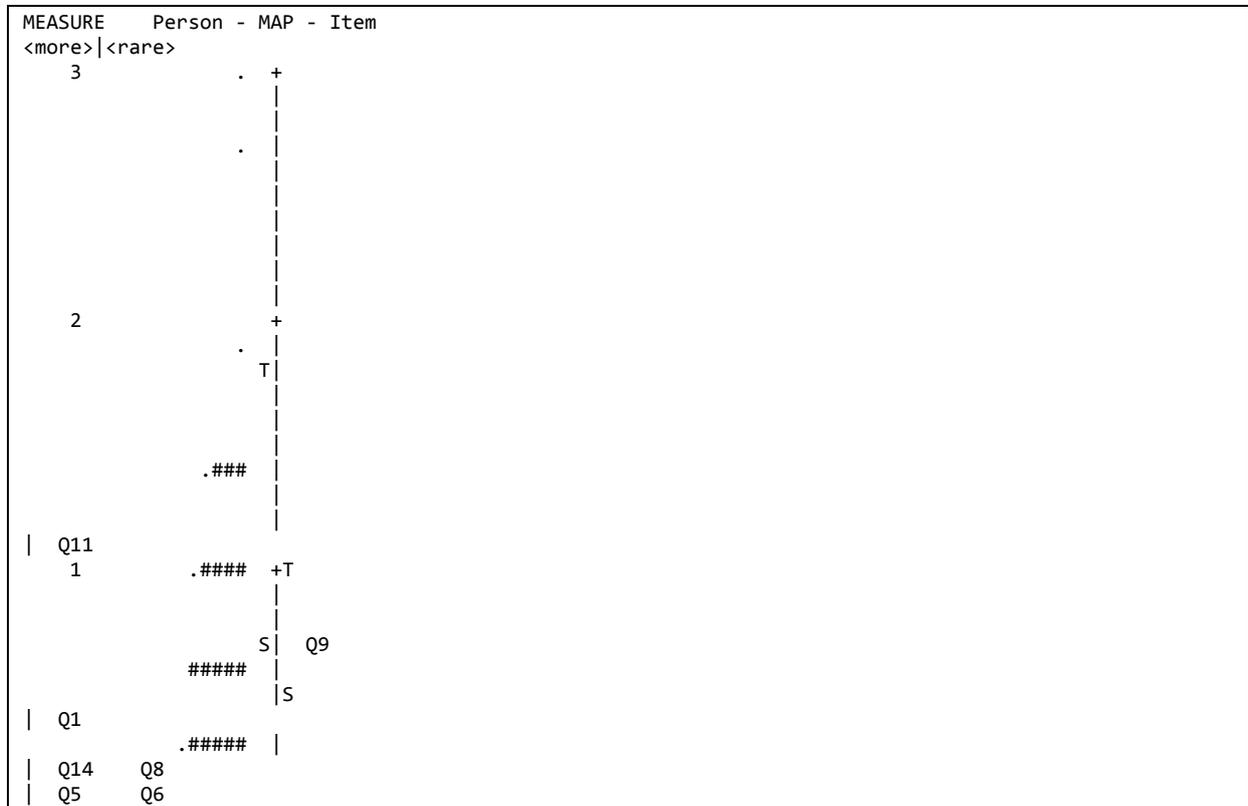


Figure 1: Wright Map of the Data

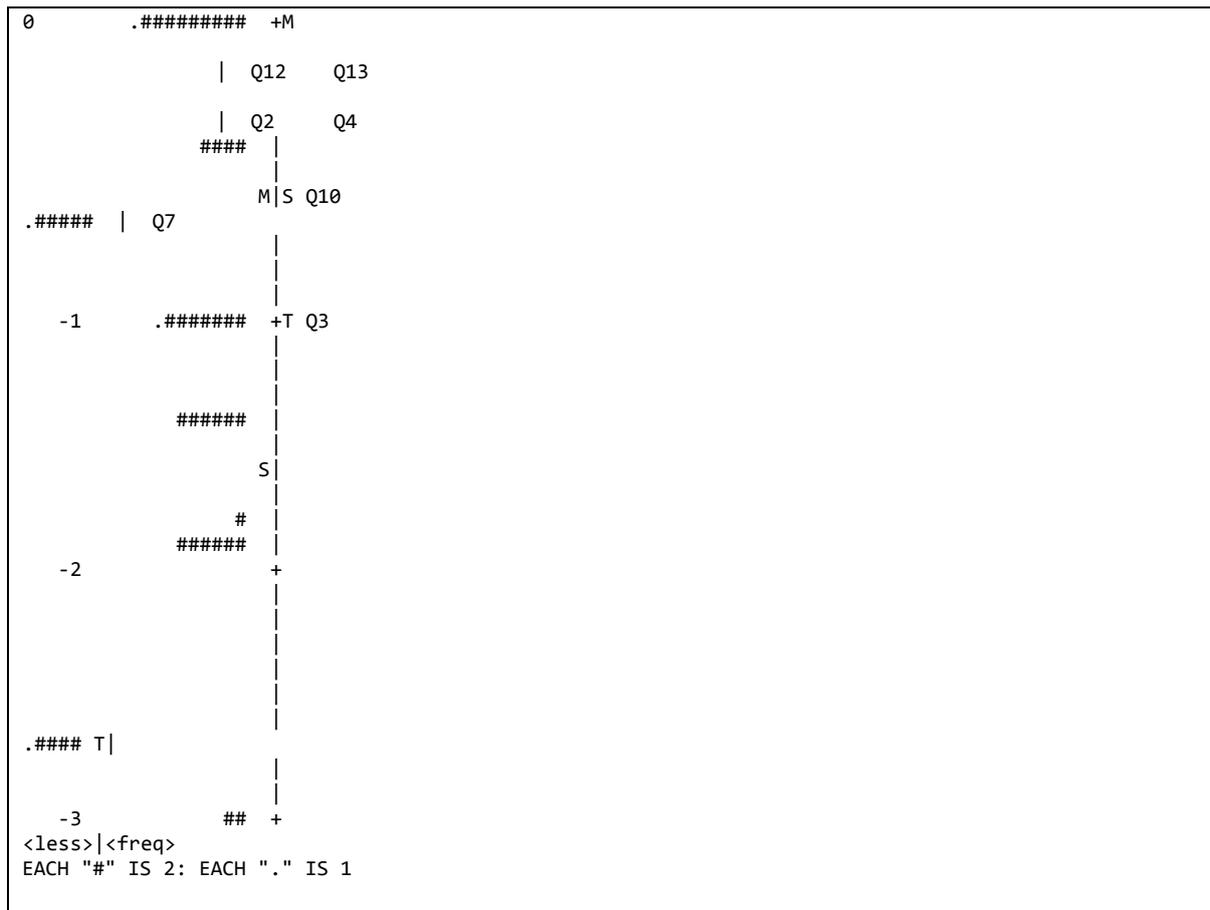


Figure 1: *Continued*

Limitations of the Study

The authors acknowledge that the 2TMC diagnostic instrument has its limitations. First of all, the context of this study is limited to the mole concept and solution concentration. Thus, the 2TMC diagnostic instrument is only applicable to these topics. Secondly, as it requires longer test time, the usefulness of 2TMC may also be limited to diagnostic purposes, and may not be advisable for use in achievement tests. The relatively small sample size does not represent the whole post-secondary science student population in the country.

CONCLUSION

Developing a diagnostic instrument using the Rasch measurement is a continual improvement process. This paper reported the first iteration of the instrument development. Although a few items need further investigations to improve the quality of the instrument, the results shown by Rasch analysis indicated that the items functioned reasonably well as a diagnostic instrument. Teaching and learning of the mole concept is an important issue because of its consequences for the solving of solution concentration problems (Dori and Hameiri, 2003). Therefore, it is imperative to develop a reliable and valid instrument to surface students' alternative frameworks so they are able to determine their specific misunderstandings, strengths and areas in need of improvement; whereas teachers can use the information gathered to design a better pedagogical approach in preparing the lessons.

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SUB THEME 3:
ACCESS TO EDUCATION & LIFELONG LEARNING



ACCEPTANCE AND USAGE, SOCIAL INFLUENCES, INSTRUCTOR'S PRESENCE AND PERFORMANCE AMONG LEARNERS IN AN ODL INSTITUTION

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ABSTRACT

Open Distance Learning (ODL) has been implemented in Malaysia for several decades to widen the access to education while enriching the quality of learner's experience. Espoused from previous literature, this article aims to study the relationship between independent variables of learner's acceptance and usage of elearning and instructor's presence and learner's performance as the dependent variable while social influences act as the mediation variable among learners in a distance learning (ODL) environment. Working adults enrolled for business programmes in one of the ODL institutions in Malaysia were surveyed. 148 participants completed a survey questionnaire measuring their responses on the said variables. The study found that there was positive relationship between the two constructs to learner's performance. Social influences fully mediated between the independent and dependent variables. This indicates that peers influence is important during the learning process and the delivery of the teaching and learning enhance the learner's competencies and knowledge. These findings indicate that these variables can be included in ODL learning environment. However, there should be also other constructs that can be explored. Suggestions and recommendations on the strength and influences of these variables to working adults were discussed and its applicability in another culture and other ODL institutions are elaborated further in this study.

Keywords: *Acceptance and Usage, Social Influences, Instructor, Performance, Open Distance Learning*

INTRODUCTION

Open Distance Learning (ODL) has been implemented in Malaysia for several decades to widen the access to education while enriching the quality of learner's experience. In line with Industry 4.0, elearning has not only become accessible and flexible but also create value for money to the users. It was reported that by 2023, the elearn market is likely to increase to USD 240 billion (Dacebo, 2016). The reason being the low fees as compared to conventional mode of learning and most likely be attractive to adult learners who have their own career. However, having career and trying to complete assignments or going to classes or working on a project can be a challenging. Though recent report indicates that 27% that the demand on job technology skills is most sought (Dacedbo, 2016) however top priority in the useage of elearn is through social or collaborative learning. Thus, in ODL, social influence can be an important factor in influencing their performance besides mobile delivery and data analytics. Past study in conventional environment, academic performance of student is highly influenced by motivation, physical environment and self-efficacy (Araini,2016) or teacher delivery and communication style (Gilbert, 2018). Nonetheless, little study is done in ODL environment on learners' performance that may be influenced by factors such as teachers' presence and acceptance and usage of technology mediated by social presence. Learners performance in ODL is important not only to the learners' future career development but also assist in reducing the high attrition rate that is common in ODL environment. Therefore, this study investigates these factors influencing the learners performance in an ODL university in Malaysia. In addition, the study is also to test the mediating effect of social influences in the relationship between users' acceptance and usage of technology and teacher's presence. The study hopes to enrich the existing literature on the elearning from the developing countries' perspective.

LITERATURE REVIEW

Rajadurai, Alias, Jaaffar and Wan Hanafi (2018) considers On line Distance learning (ODL) learners not as receivers of knowledge but rather as constructors of knowledge. However, in ODL environment, 'online learning' and 'e-learning' were used interchangeably (Bates, 2005). E-learning has evolved from learning and teaching conducted through the use of technology and electronic devices and tools, to mobile learning (m-learning) and the latest in e-learning research is learning through augmented reality (AR) (Ahmad Fauzi Ali & Aminudin,2019). The research focused on the evaluation on students' acceptance and the usage of augmented reality (AR) and its effectiveness on construction technology education. They found that the student strongly accepted the usage of AR as a learning tool. This was shown through 68% improvements on students' pre and post-test results.

Technology acceptance and usage based upon the Technology Acceptance Model (TAM) by David (1989), had introduced variables such as perceived ease of use (PEOU) and perceived usefulness (PU) (Ducey, 2013) to the academic community. In recent studies, there were strong support that iterated the relationship of acceptance and usage with learners' performance in e-learning (Mohamad, & Mustapha 2018; Ducey, 2013; Davis, 1989). Recent study also confirmed that factors affecting perceived usefulness and perceived ease of use in the adoption of e-learning system (Baki, Birgoren & Aktepe. 2018) in the elearning environment. In Malaysian context, Wahab, Othman and Warris (2016) strongly concurred that there was a positive relationship between ease of use of the eLearn and learners' performance. Other studies on the other hand, supported the notion that learners' acceptance of technology and ease of usage contributes to learners' satisfaction (Sun, Tsai, Finger, Chen & Yeh, 2008; Rajadurai Alias, Jaaffar & Wan Hanafi 2018). However, little study is done to address E-learning acceptance and learners' performance in Malaysian context.

Conversely, study by Wolff, Wood-Kustanowitz and Ashkenazi (2014) found that learners' performance has a positive relationship with variable such as instructor's assistance in learners completing their coursework besides learners hours spent studying and the learners' acceptance and willingness to learn. Meanwhile, Wu, Tennyson, and Hsia (2010) highlights that teachers assistance in making accessibility of course materials and assignments were important factors for learners. Study in Kenya in the elearning environment argued that one success factor in student performance in school is teachers presence besides policy being imposed (Ouma, Awuor and Kyambo, 2013). Later study by Seifert, Sheppard and Wakeham (2014) conjured that teacher presence in assisting student learning using technology especially in student learning centered support in enhancement student performance. Effective facilitators foster a strong sense of community by creating places into the course where learners can build relationships and chat about issues outside of the discussion questions (cyber cafes). Barron (2006) however, argued that in building strong elearning environment there is requirement to have teachers' presence that would provide strong bounding with learners while offering high standard of learning. Besides training of teachers at the university, Raaij and Schepers (2006) suggested that some kind of rewards should be given as to motive teacher to make their presence in the elearn environment. Therefore, instructor's presence especially in forums could be effective for learners especially when physical presence is impossible. Instructor presence have been discussed extensively in the past by Garrison, Cleveland-Innes and Fung (2010) applying the Community of Inquiry (COI) model. Teaching presence as highlighted by Garrison (2007) as "interaction and discourse play a key role in higher-order learning but not without structure (design) and leadership (facilitation and direction)" (p. 67). Therefore, in elearn environment to produce high performance learners there should be some kind to collaboration between their instructors and their learners. This indicate the importance of instructors in the enhancing student performance but little study is done in Malaysia.

While it is perceived that student's acceptance and usage affects learner's performance, previous study also proved that it was deliberated by social influences (Park, 2009). Social influences may shape learner's motivation to achieve desirable results. According to Dhaha and Ali (2014), factors that proved to be essential in assessing social influence and acceptance were easiness, usefulness, peer influence and the affordability of the service. According to Krezel, and Krazal. (2017), social factors comprised of factors such as institutional communication and student related factors. Institutional communication as the most influential factors in the context of higher education institutions (HEI) among students consists of printed brochures, advertising and web content (Vetloutsou, Lewis & Paton, 2004; Krezel & Krazel, 2017). Student related factors refers to the student's family, demographics, socioeconomic characteristic and academic abilities (Avery & Hoxby 2004; Desjardin et al. 2004; Ivy 2008; Maringe 2006; Sojkin, Bartkowiak & Skuzza 2014; Hemsley-Brown, J & Oplatka, 2015). Nonetheless, Kelman (1961, 2006) described social influence as a connection between an individual with the primary and secondary reference group through a media channel. Kumar (2018) suggested that variable such as the social media should also be considered to understand better its impact on the learners overall academic performance. Furthermore, flexible assessment system and learning can create a desirable level of motivation to participate in the e-learning environment which may then result to a positive academic performance (Ariani, 2016). This factor had an ancillary effect towards the student's satisfaction with the overall service including their perception towards their social surroundings. The determinants of acceptance, usage and social influence could be the influencer of learner's overall performance. Therefore, educators and managers should make a conscious effort to create a positive social environment to ensure there will have an impact on students' performance. However, the e learning platform should be at any times be 'good way of learning', (Sawang Newton, & Jamieson, 2013). Little studies have sought to use social influence as a mediating factor between variables such as instructor presence and acceptance and usage and learner's performance especially in Malaysia. Thus, this study hopes to contribute to the literature with this additional feature in the theoretical framework.

Based on the literatures, the following hypotheses have been suggested:

- H1: There is significant relationship between the acceptance and usage of elearning and learners' performance in a distance learning (ODL) Institute
- H2: There is significant relationship between the instructor's presence and learners performance in a distance learning (ODL) Institute
- H3: Social influence mediates the relationship between the acceptance and usage of elearning and learners performance in a distance learning (ODL) Institute
- H4: Social influence mediates the relationship between instructor's presence and learners performance in a distance learning (ODL) Institute

METHODOLOGY AND RESEARCH DESIGN

The overall technique and procedure used to collect data for this research is being discussed in this section. Quantitative research was utilised for this study to investigate the relationship between independent variables of learner's acceptance and usage of elearning and instructor's presence, social influences as the mediating variable and learner's performance as the dependent variable. The relevant units of analysis in this study focused on a ODL Institute. A quantitative cross sectional survey research was employed in this study. Approximately 300 questionnaires were distributed with a total of 148 responses. Response rate of 49% was achieved. As per suggested by Fraenkel, Wallen and Hyun (1996) minimum number of descriptive studies 100 samples is sufficient and for correlation studies 50 samples is deemed necessary. A structured questionnaire consisted of 19 items comprise of four sections.

The first section measured demographics, second section measured learner's acceptance and usage, third section measured social influences, fourth section indicated the instructor's presence and the fifth section learner's performance. The respondents were given one week to answer and return the questionnaire to the researcher by hand at the designated location. The measurement was adapted from past study by Ahmed (2010). The items were measured on a 5-Point Likert-type scale, anchored by 1, "strongly disagree" through to 5, "strongly agree." Content validity of the questionnaire was carried by getting three experts reviews in business management, human resource, and marketing disciplines. They were invited to review and advise in the pre-test stage. Some revisions were made after getting the feedbacks in terms of questions clarity

DATA ANALYSIS AND RESULT

This research was performed in one (1) selected learning centres of open and distance learning university within the central region in Malaysia offering postgraduate programme. This section presented the results of current study on the relationship between independent variables of learner's acceptance and usage, and instructor's presence. Learner's performance as the dependent variable and social influences as the mediator variable. The results are divided into two (2) sub-sections. The first sub-section displayed the demographic characteristics of respondents and the last sub-section explained the hypothesis testing.

Respondents' Profile

A total of 148 respondents completed the questionnaires. Table 1 depicted the items of demographics involved such as genders and age. The sample indicates that female respondents represented a slightly higher percentage of total samples (74%) when compared to the male respondents (26%). A majority of the respondents were below 35 years of age (54 %) followed by those between 35 to 40 years old (45%). Less than 1 percent of the learners were older than 41.

Table 1: Respondents Profile

Particulars	Variables	Frequency	Percent
Age	Below 35	80	54.05
	35–40	67	45.27
	Above 41	1	0.68
Gender	Male	38	25.68
	Female	110	74.32

The hypothesis of the study is being tested using Partial Least Squares (PLS) via Smartpls version 3.0. PLS approach is reckon for causal models especially when the sample size is small. To ensure the reliability and the validity of the data and construct for this study internal consistency, convergent validity and discriminant validity were performed. Structural model assessment was performed to test the hypothesis. This study also performed assessment of collinearity and the path coefficients.

In order to establish the internal consistency for this study, Cronbach's Alpha value for all the variables should be above 0.7 as suggested by Sakeran (2013). The same fulfillment in the composite reliability should also exceed the threshold value 0.7 (Nunnally & Berstein, 1994; Nunnally, 1978). For further endorsement, Dijkstra-Henseler's rho (2015) testing for all the variables rho values must be between 0 and 1. Table 2 below indicate all the results meet the satisfaction level.

Table 2: Internal Consistency

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Acceptance & Usage	0.878	0.889	0.908	0.623
Instructor Presence	0.843	0.847	0.885	0.562
Learner's Performance	0.888	0.895	0.922	0.748
Social Influence	0.915	0.918	0.946	0.854

Since the Composite Reliability (CR) only takes into consideration that each indication will have their individual loading, thus indicator reliability is recommended to measure an indicator or more with the intended measures (Urbach & Ahlemann, 2010) which is the convergent validity measures. Outer loading and average variance extracted (AVE) has been directed. As shown in Table 3 measurement model all the indicators loadings consequently not only on their respective constructs but subsequently, all the indicators loadings were much higher in their respective constructs horizontally and vertically. Throughout the outer loading values surpassed the accepted value of greater then 0.5. The CR for this study ranges from 0.655 to 0.946 as shown in Table 4 below the AVE value for this study is acceptable ranging from 0.623 to 0.854 which is higher than 0.5. Therefore, it can be concluded that there were no issues on convergent validity for this study.

Table 3: Factor Loadings and Cross Loadings

	Instructor Presence	Acceptance & Usage	Learner's Performance	Social Influence
IP1	0.769	0.456	0.449	0.482
IP2	0.810	0.366	0.46	0.457
IP3	0.760	0.472	0.419	0.465
IP4	0.706	0.199	0.472	0.361
IP5	0.788	0.338	0.411	0.452
IP6	0.655	0.354	0.505	0.427
LAU1	0.502	0.704	0.504	0.587
LAU2	0.469	0.762	0.547	0.441
LAU3	0.398	0.753	0.455	0.46
LAU4	0.409	0.876	0.382	0.633
LAU5	0.296	0.840	0.352	0.445
LAU6	0.226	0.789	0.299	0.444
P1	0.548	0.397	0.857	0.385
P2	0.512	0.522	0.878	0.434
P3	0.521	0.463	0.874	0.499
P4	0.506	0.472	0.851	0.478
SI1	0.516	0.522	0.494	0.901
SI3	0.546	0.641	0.458	0.925
SI4	0.577	0.638	0.503	0.946

Table 4: Average Variance Extracted (AVE)

	Average Variance Extracted (AVE)
Acceptance & Usage	0.623
Instructor Presence	0.562
Learner's Performance	0.748
Social Influence	0.854

To ensure that the construct is unique by itself discriminant validity assessment was performed by applying Fornell and Larcker (1982) criterion, cross loading and Heterotrait Monotrait (HTMT) Ratio. The Fornell and Larcker (1982) result in this study indicated that each indicator are highly loaded on the construct it is correlated with. To estimate the cross loading, all the indicators were found higher than its loadings on all other latent variables. In order to address the problem of shortcoming of Fornell & Larcker and cross loading, Heterotrait Monotrait (HTMT) is being tested. Table 6 indicate the HTMT is between 0.562 and 0.708 which is at acceptable level. Thus, discriminant validity is being recognised.

Table 5: Fornell & Larcker

	Acceptance & Usage	Instructor Presence	Learner's Performance	Social Influence
Acceptance & Usage	0.789			
Instructor Presence	0.495	0.75		
Learner's Performance	0.538	0.601	0.865	
Social Influence	0.651	0.592	0.524	0.924

Table 6: Heterotrait Monotrait (HTMT)

	Acceptance & Usage	Instructor Presence	Learner's Performance	Social Influence
Acceptance & Usage				
Instructor Presence	0.562			
Learner's Performance	0.605	0.701		
Social Influence	0.708	0.670	0.576	

Structural Model Assessment

In order to establish the finding of this study, structural model analysis was performed. Firstly, the collinearity issues have to be addressed by examining the Variance Inflated Factor (VIF) as suggested by Hair et al. (2017) all the variables understudy should be lower than 5 and 3.3 (acceptance & usage and instructor presence = 1.325 which indicates no collinearity problem as shown in Table 7. Bootstrapping procedures was then executed to evaluate path coefficient of the construct. This had produced significant relationships between acceptance and usage and social influence (t-value = 5.882, p = 0.001), instructor presence and social influence (t-value = 5.420, p = 0.001) and social influence and learner's performance (t-value = 8,504, p = 0.001) as indicated in Table 8, the path coefficient. The result of coefficient of determination was indicated by the R² value of the endogenous constructs. Learner's Performance R² value was reported at 0.275 which is considered weak while social influence R² value was reported moderate at 0.520 (Hair et al. 2017). Therefore, all the direct hypothesis of this study is fully supported. The full path coefficient for this study illustrated in figure 1.0.

Table 7: Collinearity (VIF)

	Acceptance & Usage	Instructor Presence	Learner's Performance	Social Influence
Acceptance & Usage				1.325
Instructor Presence				1.325
Learner's Performance				
Social Influence			1	

Table 8: Path Coefficient

	Original Sample	Sample Mean	Standard Deviation	T Statistics (O/STDEV)	P Values
Acceptance & Usage -> Social Influence	0.475	0.473	0.081	5.882	0.001
Instructor Presence -> Social Influence	0.357	0.363	0.079	4.520	0.001
Social Influence -> Learner's Performance	0.524	0.530	0.062	8.507	0.001

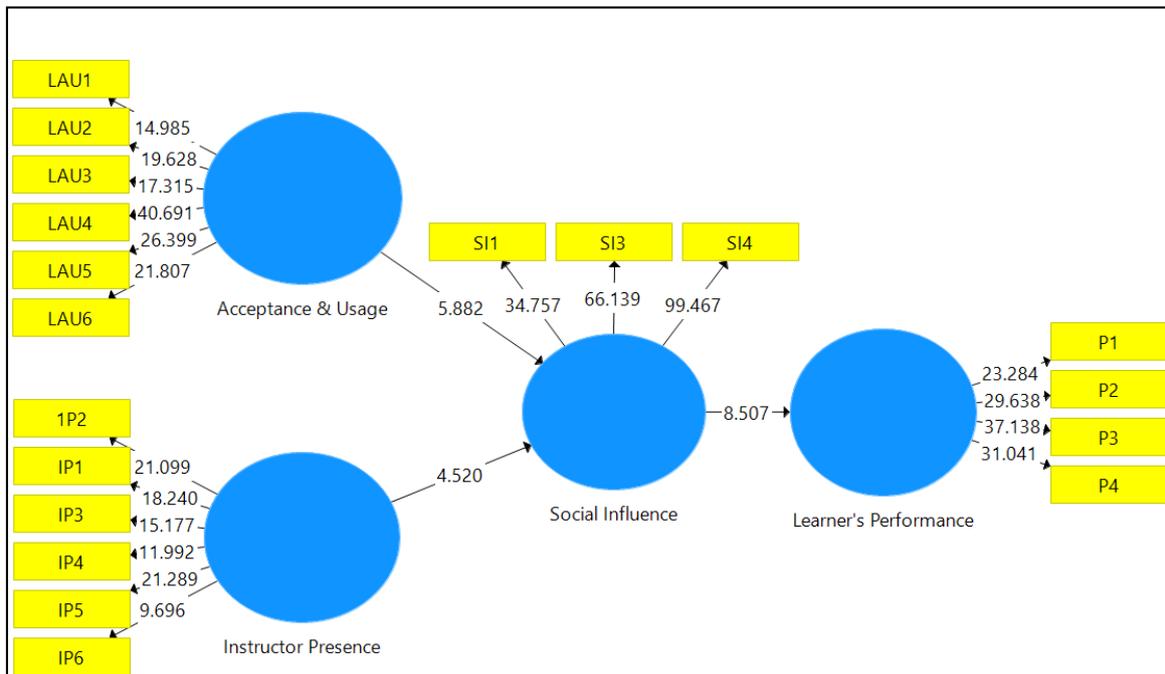


Figure 1: PLS ALGORITHM

To further examine the mediating effect of social influence in the relationship between the acceptance and usage and the relationship between instructor’s presence and learners performance among learners of in an on distance learning (ODL) Institute, bootstrapping to examine the relevant path coefficients and blindfolding procedures were performed. The result show both the independent variables have a significant relationship with learner’s performance mediated by social influence (acceptance and usage, $t = 4.656$, $p = 0.001$) (instructor presence, $t = 3.815$, $p = 0.001$). The 5% Lower Level Confidence Interval (LLCI) and 95% Upper Level Confidence Interval (ULCI) for both relationships does not straddle a 0 (zero) in between [acceptance and usage, LLCI = 0.166, ULCI = 0.341] and [instructor presence, LLCI = 0.115, ULCI = 0.276] indicates that social influence mediates the relationship between acceptance and usage and instructor presence towards learner’s performance as suggested by Preacher & Hayes (2008). The result of this indirect effect is shown in Table 9 below.

Table 9: Total Indirect Effect

	Original Sample	Mean	SD	T Statistics	P Values	5% LLCI	95% UCLI
Acceptance & Usage -> Learner’s Performance	0.249	0.251	0.053	4.656	0.001	0.166	0.341
Acceptance & Usage -> Social Influence							
Instructor Presence -> Learner's Performance	0.187	0.192	0.049	3.815	0.001	0.115	0.276
Instructor Presence -> Social Influence							
Social Influence -> Learner’s Performance							

After confirming the positive significant of the indirect relationships between the construct, several particular routines were taken to predict the mediation effect for this study. A coefficient of determination or R^2 is used to evaluate the model’s predictive accuracy as it is also to portray the effect between exogenous and endogenous variables. The R^2 values for the endogenous variables explained the models as substantial (0.275). There are 3 different reading to evaluate the acceptable R^2 values. Cohen (1988) suggested the R^2 of 0.26, 0.13, 0.02 respectively explain as substantial, moderate, and weak as a degrees of predictive accuracy.

Table 10: Coefficient of Determination R^2

	R Square	R Square Adjusted
Learner’s Performance	0.275	0.270
Social Influence	0.520	0.514

Next concern is the effect size or f^2 which is used to assess the impact strength of a predictor construct towards an endogenous construct. Particularly, the effect sizes of 0.02, 0.15 and 0.35 defining that the f^2 values as small, medium and large (Cohen, 1988). This study indicated that social influence has the large effect size (0.379) in producing the R^2 for learner’s performance. Meanwhile, both exogenous variables also give large effect size (acceptance and usage = 0.355, instructor presence = 0.2) in producing the R^2 for social influence. The result depicted in Table 11.

Table 11: F Square

	Acceptance & Usage	Instructor Presence	Learner's Performance	Social Influence
Acceptance & Usage				0.355
Instructor Presence				0.200
Learner's Performance				
Social Influence			0.379	

The predictive relevance of the path model was later examined by interpreting the Q² value by using the blindfolding procedures. Table 12 indicated that the predictive relevance Q² of intention to stay has a value of 0.245 and job satisfaction is 0.377. The result explained that the exogenous constructs have a predictive relevance based on the two endogenous constructs as the Q² values considerably larger than zero (Hair et al., 2014; Stone, 2014, Geisser, 1974).

Table 12: Q Square

	SSO	SSE	Q ² (= 1-SSE/SSO)
Acceptance & Usage	888	888	
Instructor Presence	888	888	
Learner's Performance	592	481.376	0.187
Social Influence	444	259.334	0.416

A particular concern of effect size q² was established to assess the contribution of the exogenous constructs towards the endogenous variables' Q² value. The guideline in interpreting the effect size of q² value suggested by Hair, Hult, Ringle, and Sarstedt (2016) determined that 0.02 as weak, 0.15 as moderate while a substantial value is 0.35. The calculation of the q² had been done manually using the Q² values in the formula (Hair et al, 2016) as in the following formula:

$$q^2 = \frac{Q^2 \text{ included} - Q^2 \text{ excluded}}{1 - Q^2 \text{ included}}$$

The result indicates that acceptance and usage has a substantial effect size (0.223) while instructor presence has moderate effect size (0.132).

1. Effect size Acceptance and Usage

$$q^2 = \frac{0.416 - 0.282}{1 - 0.416} = 0.223 \text{ (Substantial effect size)}$$

2. Effect size Instructor Presence

$$q^2 = \frac{0.416 - 0.339}{1 - 0.416} = 0.132 \text{ (Moderate effect size)}$$

DISCUSSION

The result of this study indicates that acceptance and usage of elearning and instructor presence have a significant direct relationship with learner's performance. These findings support the view of Wahab, Othman and Warris (2016) study on blended learning in Malaysia. Furthermore, the study also supported similar studies in applying TAM model in E-learning platform by Mohamad and Mustapha (2018); Ducey (2013) and Davis (1989). This research also found that social influence as a mediator has increased the effect of the relationship between acceptance and usage and instructor presence which supported Kumar (2018) study. Therefore, it can be concluded that, for students to perform better especially in elearning platform, social influence especially from the peers can play an important role.

The study has managerial implications for leaders and policy makers in the open and distance learning university in identifying the factors that may assist students to perform better in their study. It seems also that in this study social influence plays an important role in further enhancing learners' performance. With the present global challenges and into the era of IR 4.0, this study suggests that instructor's presence and learners acceptance and usage of elearning have a profound impact on enhancing their academic performance. Therefore, ODL universities policy makers need to have some strategic planning in enhancing the capability of their academic staff through training and good compensation package while upgrading their information technology.

From theoretical implication perspectives this study adds a relatively new area to the ODL literatures. This research also presents a significant contribution in directing the focus of the study differently where it looks into the mediating effect of social influences in the relationship of independent variables of acceptance and usage of elearning and instructor presence with the dependent variable of student performance. Empirical evidence on this topic has not been extensive and therefore this study brought highlights some significant contributions to the literatures in open learning context in a developing country like Malaysia. Future study should consider replicating the study into other educational tiers or into larger sample group that covers all open learning universities in Malaysia. Future researches should look into developing a more robust measurement for social influences variable based on other theories in management. There are many other variables that can be explored such as quality of lecturers, lecturers characteristic and quality of learning material and assessment that can contribute to enhancing student performance. Researchers should consider in pursuing a longitudinal method of research design which can further get into more in-depth knowledge into the problem.

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ACCREDITATION OF PRIOR EXPERIENTIAL LEARNING AND DEMOCRATISATION OF EDUCATION: EMPIRICAL EVIDENCE USING MULTIPLE REGRESSION ANALYSIS

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ABSTRACT

Access to education is still a worldwide problem due to various inequalities. The Malaysian Qualifications Agency (MQA) introduced the Accreditation of Prior Experiential Learning (APEL) mechanism which enables individuals who have work experience but lack in formal academic qualifications to pursue their studies at higher educational institutions. APEL Centre is an approved assessment centre for MQA. The main purpose of this study is to examine the relationship between service quality provided by APEL Centre, awareness on APEL and democratisation of education. A literature review to build the research instrument. Survey questionnaires were administered and a total of 168 were usable responses from Open University Malaysia (OUM). Face-to-face data collection procedure was adopted. A total of 63% of the respondents were aware of the entry requirements using APEL whereas 27% needed more clarification. The candidates who obtained the services from APEL Centre were interested to gain admission in Diploma (3%), Degree (58%) and Master (39%) programmes in Malaysia. The data collected were cleaned and issues related to data normality (Kurtosis < 3.00; Skewness < 1.00) were primarily resolved. The Cronbach Alpha for service quality of APEL Centre ($\alpha = 0.97$), awareness on APEL ($\alpha = 0.94$) and democratisation of education ($\alpha = 0.96$) were far above acceptable. The reported R square (0.54) indicated goodness of fit of the total regression model. Service quality provided by APEL Centre ($p = 0.01$) and awareness on APEL ($p = 0.02$) were both significant variables when examined against democratisation of education in OUM. The empirical evidence given clearly implies that APEL can help increase access to education. The role of informal and non-formal education can heighten global citizenship of the candidates. Future researchers are recommended to validate the existing measurement by performing confirmatory factor analysis and qualitative interviews to narrow the methodological gap available.

Keywords: *Accreditation of Prior Experiential Learning, Democratisation of Education, Regression and Service Quality*

INTRODUCTION

According to Grapragasem et al. (2014), governance on higher education in Malaysia has improved since independence in 1957 to fulfil the demand for quality education. It is crucial that learners are able to grasp the relevant knowledge, skills and attitude to be successful in life. The importance of education in people's lives is being gradually acknowledged in today's globalised world. This is to prepare the workforce to be democratic citizenship of the future. Malaysia places high importance on education to empower individuals for social transformation and evidence can be given to defend this claim. Recently, the education ministry remains the single largest recipient of budget allocation at RM60.2 billion or 19.1% of the total budget in 2019. This was announced at the presentation of the Malaysia Budget 2019 in Parliament. Although the fact remains the same that education is a fundamental building block for human development, access to education is still a worldwide problem due to various inequalities. Barriers like entry requirements sometimes may not allow some learners to pursue their dreams. Thus, the Malaysian Qualifications Agency (MQA) introduced the Accreditation of Prior Experiential Learning (APEL) mechanism which enables individuals who have work experience but lack formal academic qualifications to pursue their studies at higher educational institutions. APEL is the recognition of learning that has been acquired through life and work experiences. The learning could have arisen from experience in the workplace, from working in an unpaid capacity (e.g. voluntary/charity work), or from family life and leisure activities. The principle upon which APEL rests is that all learning should be recognised, wherever, however, and whenever it takes place. This mechanism provides opportunity to the masses to enhance their social status by enrolling in a higher education programme and completing it for a better future. Candidates who wish to gain admission will apply to MQA and then may choose APEL Centre as their assessment centre. Upon passing the APEL assessment, they will obtain a certificate from MQA which will enable them to pursue their studies in an institution of their choice. Equal opportunities in education and fairness in assessment are fundamental principles that must be observed by APEL Centre, at the same time providing quality services to this group of people. This requires huge efforts among the administrators of the university. One of the ways this can be achieved is by providing service quality. Quality has become an important subject of discussion among Higher Educational Institutions (HEIs), and has been extensively studied in recent years. Researchers, management and policy makers from the academia are still looking into some of the best practises to harness the power of service quality to improve students' satisfaction in the Malaysian Private Higher Educational Institutions (Raghavan & Ganesh, 2015). To ensure satisfaction of candidates, OUM will need to determine first, which services candidates prefer and second, whether they are satisfied with them. The aim of this paper is to examine the relationship between service quality, awareness and democratisation of education.

Significance of APEL Centre

Open Entry Admission System was introduced in Malaysia in 2006. This system has paved the way for people to pursue lifelong learning. The main objective here is to focus on development of human capital. Open University Malaysia (OUM) was the first open and distance learning institution that was given the mandate to implement this system in the country. Through open entry, individuals who did not meet the conventional entry requirements could leverage on their work experience to gain admission into OUM. Due to the snowballing effect in enrolment through open entry, APEL was introduced in 2016. APEL is defined as a systematic process that involves the identification, documentation and assessment of prior experiential learning, i.e., knowledge, skills and attitudes, to determine the extent to which an individual has achieved the desired learning outcomes, for access to a programme of study and/or award of credits (MQA, 2014). At present, APEL Centre is appointed by the Malaysian Qualifications Agency (MQA) which plays an active role in democratising education by providing opportunities to the masses. The Centre ensures that all its initiatives and practices adhere to the regulations outlined by MQA.

FOCAL LITERATURE TO DEVELOP RESEARCH INSTRUMENT

This paper intends to examine the relationship between service quality, awareness on APEL and democratisation of education. Thus, it is imperative that the measurements are established before conducting a quantitative analysis. Service quality is the discrepancy expectations and actual offerings and it has been widely studied by previous authors like Zeithaml (1987) and Parasuraman et al. (1988). According to them, service quality is defined as customers’ judgement about their experience. Parasuraman et al. (1988) is a prominent literature in which they have identified ten dimensions of service quality: tangibles, reliability, responsiveness, competency, courtesy, communication, credibility, security, access and understanding. Over the time, these variables finally were factored to five main constructs. The consensus view seems to be classify them as 1) tangibles 2) reliability 3) responsiveness 4) assurance and 5) empathy. Along similar lines, APEL seeks to recognise skills and knowledge that have evolved from formal, informal and non-formal learning experiences and is supposed by some to be ‘a powerful tool for bringing people into the ODL learning system’. Candidates must be able to define and know the differences between formal, informal and nonformal learning. They have to be aware of the opportunities available so that the chances of enrolment are higher. According to MQA (2014), formal learning is intentional learning in an organised and structured context such as recognised school and university whereby there is formal recognition. On the other hand, informal learning takes place continuously through life and work experiences. Finally, non-formal learning takes place alongside the mainstream systems of education and training. It may be assessed but does not normally lead to formal certification. The literature of Peters (2004) has clearly discussed the input-process-output elements for inclusive educations. Educational institutions, student characteristics and community characteristics are some of the inputs. They go through the proper process of learning in view of achieving the ultimate goal, which is to be able to have literacy, positive attitude, self-esteem, social skills, citizenship and determination. These items are used to measure democratisation of education in the framework presented in the conceptual framework of this paper.

CONCEPTUAL FRAMEWORK AND HYPOTHESES

Conceptual framework presented in Figure 1 clearly shows the hypothesised relationships. There are two main hypotheses in this study that will be able to satisfy the research objectives:

- H1: There is a relationship between service quality and democratisation of education
- H2: There is a relationship between awareness of APEL and democratisation of education

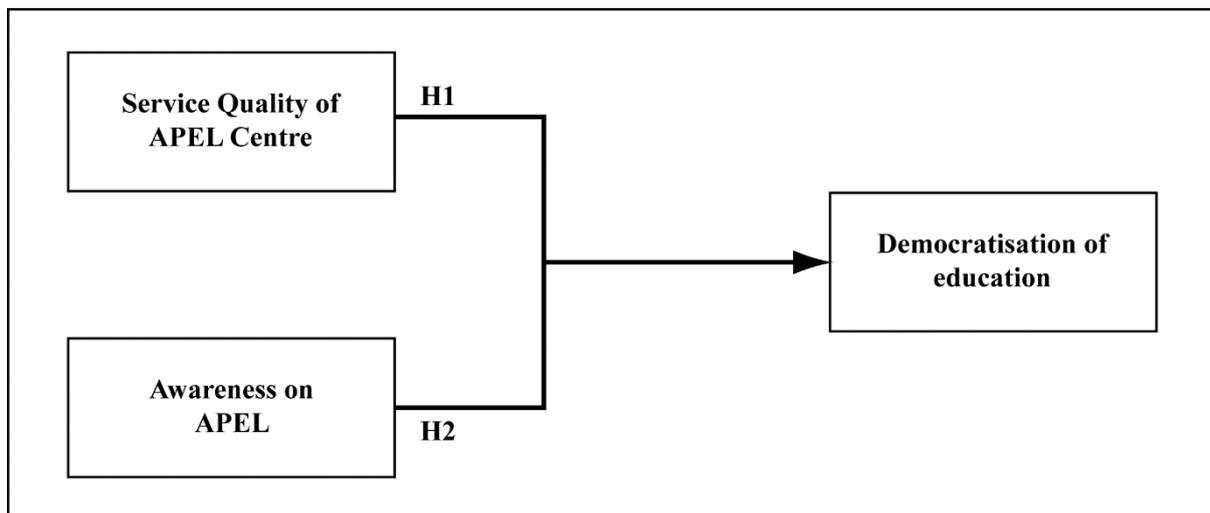


Figure 1: Conceptual Framework

RESEARCH METHODOLOGY

This quantitative study used a questionnaire to obtain feedbacks from respondents. Items measuring the three variables were largely derived from the literature review. Likert scale was used to measure the perception of the APEL candidates. Focal literature was examined prior to developing the research questionnaire. Thereafter, the questionnaire was given to a few academicians to get some content validation, in view of enhancing the understandability of the items. Convenient sampling and face to face data collection methodologies were adopted for this study. The data were collected with the assistance of a research assistant. Prior to the conduct of regression analysis, reliability and normality indices were calculated. It will be presented later in this paper. A total of 200 candidates who came to OUM to do their aptitude test and submit their portfolios were approached data collection, out of which 168 provided replies. Table 1 below provides participants' demographic information in details.

Table 1: Demographic Profile of Respondents

Items	Particulars	Frequency	%
Age group (Years)	20 – 25	26	15.5
	26 – 30	28	16.7
	31 – 45	99	58.9
	46 – 50	11	6.5
	51 – 55	3	1.8
	Above 56	1	0.6
Gender	Male	95	56.5
	Female	73	43.5
Employment Status	Employed for wages	145	86.3
	Self employed	21	12.5
	Retired	2	1.2
Organization	Public sector	48	28.6
	Private sector	112	66.7
	Others	8	4.8
Level of Intended Study	Diploma	5	3
	Bachelor	98	58.3
	Master	65	38.7
Level of Management	Low level management	26	15.5
	Middle level management	118	70.2
	Top level management	24	14.3
Familiar with APEL Admission (A)	Yes	105	62.5
	No	63	37.5

Normality and Reliability

Assessment of normality for all the items in Table 2 is scrutinized using Kurtosis and Skewness. For a normal distribution to take place, Kurtosis should be between 0 and 3 (Lei & Lomax, 2005) whereas skewness must be between -2 to +2 (Weinberg & Abramowitz, 2002). This can be observed clearly for all the 21 items shown in Table 2 below. The measures for reliability in this study are all above 0.70 as suggested by Nunnally (1978), indicating internal consistency for all the constructs.

Table 2: Data Normality and Reliability

No	Measurement	Kurtosis	Skewness	Alpha
<u>Service Quality</u>				
1	I am pleased with the prompt service delivered by APEL Centre	-.661	-.478	0.97
2	I have trust in APEL Centre in managing the APEL processes	1.118	-.960	
3	I believe the APEL Centre staff can demonstrate care towards my needs	-.268	-.530	
4	I perceive the communication materials given by APEL Centre were clear	1.358	-.842	
5	I consider APEL Centre as a reputable department in handling APEL processes for MQA	-.438	-.673	
6	I have received individualized attention from APEL Centre in my application process	.563	-.692	
7	I am happy when using the physical facilities in APEL Centre	.712	-.790	
8	I am glad to notice the willingness of APEL Centre staff in helping me	.034	-.600	
9	I am glad when using the equipment provided by APEL Centre	.036	-.492	
10	I will recommended APEL Centre as an APEL assessment Centre to people (word of mouth)	-.494	-.609	
11	I have confidence in APEL Centre in managing the APEL processes	.933	-.855	
<u>Awareness on APEL</u>				
12	I am familiar with the term 'formal learning'	.061	-.437	0.94
13	I am familiar with the term 'nonformal learning'	.345	-.555	
14	I am familiar with the term 'informal learning'	.153	-.414	
<u>Democratization of Education</u>				
15	I believe the APEL mechanism contributes in personal development among learners	-.491	-.674	0.96
16	I believe the APEL mechanism assists to shape positive attitude towards learning	-.488	-.688	
17	I believe the APEL mechanism helps to improve literacy among learners	-.435	-.686	
18	I believe the APEL mechanism helps to advance self-esteem among learners	.426	-.734	
19	I believe the APEL mechanism enhances self-determination among learners	.501	-.730	
20	I believe the APEL mechanism imparts independent living skills among learners	.791	-.739	
21	I believe the APEL mechanism helps to produce good citizenship among learners	-.737	-.573	

Regression Analysis and Findings

Multiple regression analysis is used to examine the relationship between one dependent variable and a number of independent variables. It is based on correlation, but it also examines a refined relationship between the set of variables according to Pallant (2016). In view of examining both hypotheses in this study, a multiple linear regression is performed. The adjusted R square is calculated to present how much the model explains the variations in the dependent variable, which in Table 3 is 0.53. This means that the service quality and awareness on APEL are relevant to democratisation of education. The regression model is valid because the significant level of ANOVA is below 0.05 as reported in Table 4. Goodness of model fit is justified. Finally, the coefficients are reported in Table 5 of this study.

Table 3: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.732	.536	.530	.48030

Table 4: ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Regression	43.937	2	21.969	95.229	.000
Residual	38.064	165	.231		
Total	82.001	167			

Based on what is established in Table 5 below, H1 is supported because the p value < 0.05. There is a relationship between service quality of APEL Centre and democratisation of education. Consistently, H2 is also supported (p = 0.02). It can be summarised that there is a significant relationship between awareness of APEL and democratisation of education. The implications and suggestions for future study arising from these findings will be explained in the subsequent sections of this paper.

Table 5: Coefficients

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.923	.244		3.781	.000
Services of APEL	.683	.063	.654	10.827	.000
Awareness on APEL	.118	.050	.141	2.340	.020

IMPLICATIONS

Based on what is established in the descriptive analysis and regression results, some implications can be made in this paper. Here are six implications from this study:

1. A total of 59% of respondents are interested to pursue education come from the age range of 31–45 years old and mostly are employed for wages (86%). Marketing strategy of ODL universities must focus more on this group of people.
2. The candidates who are interested in the APEL mechanism are mostly coming from private sector (67%) as compared to public sector (23%). Most of them are interested to do Degree programmes (58%) as reported in the descriptive analysis. Therefore, proper branding strategies must be carved in future to create more awareness to both groups of people in public and private sectors. Word of mouth communication may also be helpful.
3. A total of 63% of respondents are aware of APEL admission requirements whereas 27% of the rest still need more clarification. As stated in the introduction, barriers like entry requirements may hinder progress of people. Thus, everyone must be informed on the APEL admission requirements.
4. Prompt service and more care must be shown to people who are in low management so that more people are interested in APEL. Currently, a majority of 70% is coming from middle management.
5. Since there is a significant relationship in the regression model between service quality and democratisation of education, APEL Centre must ensure that all that the five dimensions of service quality (reliable, tangible, responsiveness, assurance and empathy) are well preserved at all times in future. This will help candidates to achieve literacy and enhance their positive attitude.
6. The process from application to assessment to declaration of APEL results must be clearly communicated so that candidates are aware of formal, informal and nonformal learning. They will prepare better portfolios which will enhance their chances of getting admission in view of enhancing their social skills and citizenship.

SUGGESTIONS FOR FUTURE RESEARCH

Two suggestions are given to future researchers. Firstly, they are recommended to validate the existing measurement by performing confirmatory factor analysis (CFA). This will open path for more research papers to be published in the interest of APEL. Methodologies like structural equation model can also be conducted by future researchers when CFA is done. Secondly, future studies can focus on performing qualitative interviews to narrow the methodological gap. This will help universities understand the stakeholders better. Eventually aiding universities to carve strategies in view of enhancing stakeholders' satisfaction so that education can be democratised in the most effective and efficient manner.

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ACHIEVING SERVICE EXCELLENCE THROUGH MYSTERY SHOPPING

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ABSTRACT

To stay at the forefront of the education industry, OUM stays motivated and strong with a refreshed and revived #DareToDream motto. Over the past few years, we have realised our goal and made it happen through various reengineering developments either structurally, technologically or physically to remain fit for purpose for the future. However, in this age where there is intense competition in the education industry, to function like before is no longer sufficient and appropriate. Thus, OUM takes a step back and proactively makes an effort to ‘understand and listen to the voice of the students’ through Mystery Shopping. This paper will present the results of the mystery shopper programme conducted at OUM. For this pioneer project, the research team has selected at random OUM students to serve as mystery shoppers since they are familiar with the academic environment and their expectations may be more in line than an outside shopper. The measurement instrument consists of 50 items based on five constructs. The questionnaire was developed based on a six-point Likert scale from Strongly Disagree to Strongly Agree and followed by open-ended questions for shoppers to give comments and suggestions. Data analysis showed that the average mean score for the five categories are in the range of 4.77–5.01. Although results are on the high side for most items, there are some items in each of the five constructs which require attention. Mystery shopping is an accurate and efficient and effective method to gain in-depth knowledge of customers’ satisfaction and it should be part of the university’s strategic activity.

Keywords: *Mystery Shopping, Feedback, Continuous Improvement, Strategic Activity*

INTRODUCTION

At our institution, our learners are our customers and we need to find out whether they are receiving top quality service and are satisfied with the interactions they have with our staff. This aspect is often overlooked as the university is busy with administrative processes. The countless interactions learners have with university staff outside the class can have extreme effects on learner experience. Such interactions can affect his or her view of the experience, thereby making him or her either likely or less likely to recommend the university to others. Good interpersonal communication and high service standards are therefore the means to ensuring learner satisfaction.

But how do we attain service excellence? Our customer is the focus in our business but measuring customer satisfaction through survey questionnaires is quite inadequate to understand our customer's expectations and perspective. In this current situation, it is insufficient to have information of service excellence in processes and provision of services only. To be a leader in open and distance learning (ODL), it is important to think differently and to create distinction from the other players by focusing on customers' experiences. In today's society, services become more important and customer plays a major role in the running of any business. Customer would like to experience excellence in the quality of products, quality processes and quality systems. Now, the current development in strengthening the organisation is to broaden our mindset further that is to focus and build quality relationships with the stakeholders outside of these boundaries (Dale 2003). This is a method to build competitive advantage among the other players of ODL.

The ODL market should be driven by customer's expectations and experiences and other methods of measuring satisfaction.

In any organisation, quality is observed in the product, process and system. This is a strategy to achieve organisational quality (Dale 2003). However, the current trend is to build good relationships with stakeholders and to pay more attention to existing customers. There are various reasons why companies put so much emphasis in building customer relationship. In developed countries, customers play important roles in services, furthermore strong customer relationships are becoming the only way to compete in many business sectors.

The latest ISO 9000:2000 standard includes a drive towards more customer orientation (ISO 9000 2000). However, in practice it means more often a kind of basic survey to gather customer feedback data through satisfaction scores that are seldom used for organisational development or improvement. From the perspective of the quality award models or business excellence models there might be more attention to the overall process of why customer satisfaction measures are in place, how they are executed in relation to other activities and how they are used to develop organisational improvement (EFQM 2004; NIST 2004). A far more challenging focus is to go beyond customer satisfaction and develop excellent customer experiences according to the ideas described by Pine and Gilmore (1999). A far more challenging focus is to go beyond customer satisfaction and develop excellent customer experiences according to the ideas described by Pine and Gilmore (1999).

Organisational change should then be driven by a broader focus on customers' expectations and multiple ways of measuring customers' satisfaction. The case of a service company in The Netherlands (a temporary employment agency) illustrates the way to service excellence as an organisational change process. The case supports the need for a broad focus on measurements in order to be able to monitor and to direct organisational changes. Customer satisfaction data based on surveys are needed; however, they will not be sufficient for continuing the change process over time. To achieve that, other measurements like mystery shopping may give more stimuli to change. Therefore, this research argues that mystery shopping can be a useful instrument in addition to the more often used survey methods.

LITERATURE REVIEW

Mystery shopping has been used extensively in a variety of industries, including the medical, retail, hospitality, and tourism fields, among others. Further, over the last 20 years, it has received greater attention in the literature. Topics have ranged from the development of programs to the recruiting of shoppers to measuring the effectiveness of programs. The following section summarizes some of the key articles published in the business, hospitality, and tourism literature during this time.

A few case studies of different companies in different industries are reported in the literature. For instance, Van Der Wiele, Hesselink, and Van Iwaarden (2005) reported on the use of mystery shopping to evaluate services in a Dutch employment agency; Pinar, Eser, and Strasser (2010) reported on the use of mystery shopping to evaluate the quality of services in Turkish banks; Mattsson (2012) discussed the use of mystery shopping in the Business-to-Business (B2B) sector in Sweden; Hapenciuc, Stanciu, and Costea (2014) used mystery shopping to measure speed, accuracy and politeness of travel agents in Romania; and Granatino, Verkamp, and Parker (2013) used mystery shopping to measure employee engagement and customer-service performance in a health care setting. Results consistently showed the benefits of mystery shopping across industries and settings while also evaluating costs and other considerations.

Mystery Shopping in the Air Force Bases

Mystery shopping was recommended due to the increase emphasis on the customer in the U.S. Air Force (Beck, Lalopa and Hall 2003). The authors designed and tested a program at Wright-Patterson Air Force Base. The program included: marketing materials, recruiting materials, evaluation forms, training program, shopping schedule, program budget, recognition program, and other administrative requirements. The emphasis was on the recruiting and training of shoppers, which included the development of a training guide, training sessions and a recognition program for employees who were identified as top performers. The program was piloted using 36 shoppers who conducted 43 visits. The researchers then assessed the effectiveness of the program based upon feedback from the shoppers. The authors made several recommendations for improvement including recruiting, training and recognition. The authors deemed the program a success and one that equipped the base with tools for improving customer service.

Mystery Shopping in Service Delivery

The role of mystery shopping and its relationship with service delivery was studied by Wilson (1998). The author interviewed managers of mystery shopping programs in four different industries, as well as directors of four market research agencies that commissioned mystery-shopping services. Specifically, the author sought to explore “the reasons for using mystery shopping as a measure of service performance; the procedures used to ensure the objectivity and reliability of mystery shopping research; and the use made of mystery shopping data and the manner in which this data is communicated to service personnel”. The interviews revealed that mystery shopping is likely to continue as a measure of service quality but that it may be complemented with other measures such as recording technology and operational data. The author concluded by suggesting that standards constantly be reviewed and updated for maximum effectiveness.

Finn and Kayande (1999) conducted a psychometric study of mystery shopping in order to determine the effectiveness and generalizability of the data in two subsequent studies. In the first study, the authors used an adapted SERVQUAL instrument to conduct mystery shop visits to three coffee shop outlets. A total of 45 reports were used in the analysis. A customer survey was conducted simultaneously in order to compare results. An analysis of the mystery shopping data showed sources of variance to include outlets by shoppers, random error, and the outlets themselves. Comparisons suggest that mystery shopping was more cost effective (when achieving a comparable g-coefficient) than was conducting customer surveys. The authors then conducted two follow-up studies, using secondary shopping data. They concluded that while mystery shoppers can produce highly reliable data, in a cost efficient manner, they suggested caution in relying too much on individual reports. Instead, they strongly suggested using aggregated data from multiple reports.

Mystery Shopping in Hotels

Beck and Miao (randomly selected hotels from a hotel database and surveyed general managers and controllers of those hotels about their mystery shopping practices and the perceived effectiveness of their programs. It was determined that the majority of hotels had mystery shopping programs in place, conducted their programs quarterly (or more often) and contracted the services out to specialized firms. The authors reported that “The two primary purposes of mystery shopping revealed in this study are to evaluate service quality and monitor cash handling and asset control procedures”.

Mystery Shoppers in Restaurants

One hundred and eighty three responses from managers from a variety of restaurants to determine their perceptions of the effectiveness of mystery shopping were analyzed (Su and Tsai 2014). It was determined that: (1) most mystery shopping programs were implemented to measure service quality; (2) most shoppers hired were hired through Sustainability 2015, 7 12284 corporate offices; and (3) most visits are conducted on a monthly basis.

A factor analysis revealed that managers perceived mystery shopping to be most effective in the areas of “product quality standards,” “service skill standards,” and “asset control.” The authors concluded that “Chain restaurants still need to consider... Mystery shopping may not be the perfect means of assessing quality within a franchise system, but it remains an effective method of helping franchisees the minimum levels of service quality required by franchisors”.

The literature suggests that mystery shopping is used as a means of measuring and maintaining quality standards in a variety of industries. It continues to be used in the hospitality and tourism industries, as evidenced by several studies conducted in hotels, restaurants, and tourism organizations. They can be effective (and cost efficient) provided that companies plan the programs adequately. Among other things, companies should consider what to measure, how to measure it, frequency of visits, recruiting, selection and training of shoppers, compensation, and dissemination of information. The literature provides recommendations in managing each of these facets. Hotel and restaurant companies, in particular, can benefit greatly from these programs.

A company’s goals often aim to train its employees to consistently deliver quality services. Concurrently, mystery-shopping measurement has been used effectively to objectively evaluate whether employees follow the visions of a company’s quality service. Areas that are often measured during a mystery shopping visit include the condition of the driveway, condition and lighting of the parking area, lighting and general maintenance of the front area, security, pavement surface, landscapes, outdoor signage, clear direction, accessibility, the cleanliness of the foyer and the lobby, timely assistance, greeting manners, friendless and professionalism of staff and managers, effectiveness of greeting and serving procedures, and quality of services throughout the visit.

Mystery shopping visits can also determine if there are visible and clear exits, functional facilities, and instructions about what should be done in case of fire and other emergencies. Studying various measurements of quality of service in the hospitality and tourism industries has attracted notable attention in the literature.

Types of measurements have included focus groups, on-site audits, continued employee training and development programs, customer comment cards, hard copies of questionnaires, online surveys, benchmark analyses, and mystery shopping approaches. Based on the outcome of a mystery shopper’s observation and experience, a hospitality business may consider establishing training strategies to ensure that the quality of services meet and/or exceed company policies and standards. For example, a ringing phone needs to be picked up within seven seconds, a front-door greeting needs to be performed within seven seconds, the waiting time for check-in and check-out should not exceed five minutes,

a staff member cannot pass a guest without greeting them, and staff members should assist customers in a pleasant voice and with professional manners.

METHODOLOGY

The mystery shopper programme was conducted in 2018 to find out whether our learners experienced positive and productive interactions with our staff. We also wanted to know whether we are doing things right according to university standards.

Our research team randomly selected 13 learners to become mystery shoppers as they are already familiar with the academic environment and their expectations would be more relevant than those of external mystery shoppers. They were trained on what to do via telephone discussions and provided with a step-by-step procedure on how to conduct the mystery shopping programme. The areas taken into account are the parking area, facilities and general maintenance, cleanliness of the foyer and lobby areas, Internet accessibility, greeting manners, timeliness of assistance, friendliness and professionalism of staff and quality of services.

A 44-item survey questionnaire focusing on four criteria was developed. The measurement is based on phone etiquette, support services, employee attributes, building and facilities. The items were constructed based on a six-point Likert scale ranging from “1 = strongly disagree” to “6 = strongly agree”. The survey questionnaire was uploaded in Google Form for the purpose of scoring by the mystery shoppers.

The mystery shoppers conducted on-site visits, telephone conversations and online interactions targeting various departments such as Admission and Records, Learner Services Centre, Group Account and Finance, and Assessment and Examination Division. Their on-site visits included five Klang Valley Learning Centres: Kuala Lumpur, Sri Rampai, Bangi, Petaling Jaya and Shah Alam. After the interactions, the learners filled in a survey questionnaire and submitted it to the research team.

FINDINGS AND DISCUSSION

The data collected was analyzed using MS Excel. There were no missing data in the analysis process. Descriptive statistics were presented in Table 1, Table 2, Table 3 and Table 4.

Table 1 shows the distribution of scores for the 12 items in phone etiquette. On a 6-point Likert Scale, the mean score for phone etiquette is 5.30.

The mean score for the 10-item at LC Facilities is 5.35 as shown in Table 2. In this construct Wi-Fi connectivity showed the lowest mean of 4.54. This shows that our learners are maximizing the usage of the Wi-Fi connectivity; however, the institution will need to look into this matter to improve the situation.

Table 3 presents the distribution of scores for the 8 items in LC Building. The mean score for the building is 5.38. Most of the shoppers agree that the building is well maintained and organized. Table 4 shows the 14-item on LC Employee Attributes. The mean score is 5.10. In this construct, there were 3 items showed the lowest mean of 4.92, which are item 2, 11 & 13. This shows that our learners expected high interpersonal relationship with the staff attending to them. The radar diagram in Figure 1 reveals all three construct Facilities, Building and Phone etiquette scored approximately a mean value of 5.30, except for Employee Attribute (mean value of 5.10). Our employees at the learning centres have been trained in many areas including marketing, product knowledge, problem solving, customer engagement and improving customer satisfaction. However, from the radar diagram, the assumption

that can be made of the low mean value for employee attribute is due to the high expectation of the learners. Our learners are working adults; they expected more personal interaction with the employee.

Table 1: Mean Scores for Phone Etiquette

	Scale	Strongly Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree	Mean	
		1	2	3	4	5	6		
Phone Etiquette (12 Items)	1	Answered call promptly				2	4	7	5.38
	2	Friendly greeting	1	2			5	6	5.08
	3	Friendly Voice			1	1	5	6	5.23
	4	Introduce herself/himself				2	6	5	5.23
	5	Request the caller to introduce himself			1	1	5	6	5.23
	6	Ask politely the purpose for the communication					8	5	5.38
	7	Good knowledge of administrative system					9	4	5.31
	8	Helpful and positive tone				1	4	8	5.54
	9	Courteous and patient				1	7	5	5.31
	10	Answered confidently			1	1	5	6	5.23
	11	Reasonable time taken to resolve issues				2	5	6	5.31
	12	Call ended professionally					8	5	5.38
Mean for PE								5.30	

Table 2: Mean Scores for LC Facilities

	Scale	Strongly Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree	Mean	
		1	2	3	4	5	6		
LC – Facilities (10 Items)	1	Toilets					7	6	5.46
	2	Tutorial rooms			1	1	3	8	5.38
	3	Prayer room					4	9	5.69
	4	Resource centre				1	4	8	5.54
	5	Computer lab					7	6	5.46
	6	Wi-Fi connectivity			1	5	6	1	4.54
	7	Updated computer system			1	1	6	5	5.15
	8	Office operate during published working hours					6	7	5.54
	9	Programme information is obtainable			2	1	2	8	5.23
	10	Environment favourable for study				2	3	8	5.46
Mean for Facilities								5.35	

Table 3: Mean Scores for LC Building

	Scale	Strongly Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree	Mean	
		1	2	3	4	5	6		
LC – Building (8 Items)	1	Wall are clean and maintained					6	7	5.54
	2	OUM logo is easily spotted and maintained					4	9	5.69
	3	Availability of parking area				1	8	4	5.23
	4	Entrance hall is neatly organised			1	1	5	6	5.23
	5	Arrangement in entrance hall is welcoming			1	2	5	5	5.08
	6	Lobby area is organised and not cluttered		1		1	4	7	5.23
	7	Front desk is clean and tidy				1	3	9	5.62
	8	Notice board are maintained with current information				2	3	8	5.46
Mean for Building								5.38	

Table 4: Mean Scores for LC Employee Attributes

	Scale	Strongly Disagree	Disagree	Somewhat Disagree	Somewhat Agree	Agree	Strongly Agree	Mean	
		1	2	3	4	5	6		
LC – Employee Attributes (14 Items)	1	Appropriate attire					8	5	5.38
	2	Greeted promptly			1	2	7	3	4.92
	3	Friendly greeting				1	9	3	5.15
	4	Courteous				3	6	4	5.08
	5	Enthusiastic			1	1	7	4	5.08
	6	Seriousness			1	1	7	4	5.08
	7	Confident to give feedback				2	8	3	5.08
	8	Good administrative knowledge				3	4	6	5.23
	9	Good product knowledge				2	7	4	5.15
	10	Professional communication				2	7	4	5.15
	11	Creates a comfortable session			1	2	7	3	4.92
	12	Build understanding of the enquiries				2	7	4	5.15
	13	Reasonable time taken to resolve enquiries				3	8	2	4.92
	14	Pleasant closure of meeting			1	2	4	6	5.15
Mean for Employee Attributes								5.10	

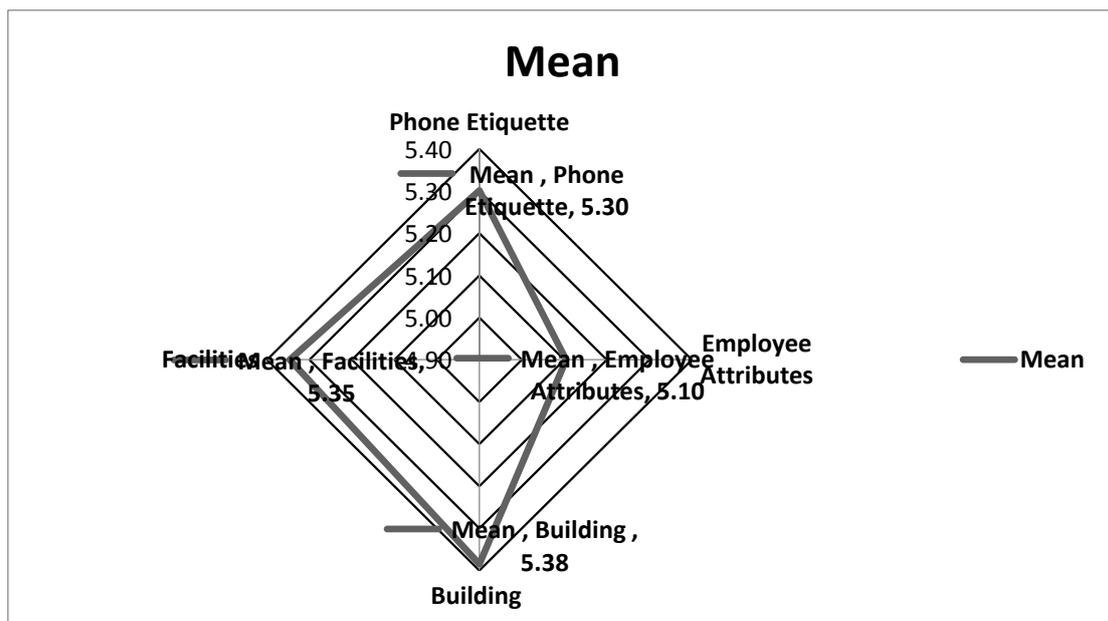


Figure 1: Summary Scores for the Four Criteria

CONCLUSION

The Mystery Shopper programme has been an effective tool to gain in-depth knowledge of our learners' perception of our service delivery. The information received can also help us improve our training processes as it has identified areas where employees require more motivation and skills to provide better services.

The survey findings also highlighted the critical areas for improvement, namely:

- (a) Staff product knowledge
- (b) Staff knowledge of administrative procedures
- (c) Wi-Fi connectivity
- (d) Maintenance of toilets
- (e) Technicalities in answering phone calls.

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ASSESSING THE QUALITY OF TRANSLATED MODULES IN AN ODL INSTITUTION: THE OUM EXPERIENCE

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ABSTRACT

Open University Malaysia (OUM) is one of the pioneers of open and distance learning (ODL) in Malaysia. English is the main medium of instruction at OUM. However, the Malay language is the national language of the country and it is estimated that 55% of OUM adult learners are from the Malay speaking background, thus there is a necessity to produce bilingual modules to meet their needs and improve their access to education. The university has produced 82 bilingual modules as of May 2018. At OUM, the Centre for Instructional Design and Technology (CiDT) is responsible for developing learning materials in OUM, including Portable Document Format (PDF) modules and video lectures. A total of 2,431 modules and 288 video lectures, as of September 2018, have been produced. The overall purpose of this paper is to determine whether a relationship exists between the quality of translated modules and the translators' qualifications. This research finding is also concerned with creating a pool of competent translators to further enhance the quality of translated modules. The basic design of data for this research paper was gathered from a translation project for OUM's Cluster of Business and Management conducted in six phases from July 2013 to May 2015. This research will review selected modules against the translators' background and the quality ratings given by OUM academics. A total of 53 translated modules from English to Malay will be reviewed. It is hoped that the findings will help OUM gain new insights into ways of coming up with quality translated modules to meet the needs of learners.

Keywords: *Quality, Translation, Translators, Modules, Accessibility*

INTRODUCTION

Open University Malaysia (OUM) is the first open and distance learning university in Malaysia with the noble goal of democratising education in the country. In order to widen access to quality education, the university leverages on innovation and flexible modes of learning to provide an enriching learning experience. The university also adopts a learner-centric approach because adjusting to the ways and methods of education to suit the characteristics of the learners is one of the conditions of democratising education effectively (Murati, 2015). One such characteristic of Malaysian learners in general is the lack of English literacy. This can be seen in the recent Programme for International Student Assessment (PISA) 2015, where Malaysia was ranked 49th out of about 70 countries for reading in the English language (The Star, 2017). Thus, OUM has been increasingly conscious of its learners' needs for bilingual facilities and among the ways were to allow learners to answer exam questions bilingually and to some extent produce bilingual modules for learners.

There was a need for bilingual modules as learners found OUM modules difficult due to the use of "high-level" English language; and this was shared by the tutors who believed that bilingual modules were preferred by the learners (Shawira Abu Bakar et al., 2014). This paper will discuss a translation project by the Cluster of Business and Management (CBM) embarked by the university and conducted by the Centre for Instructional Design and Technology (CiDT). The project was implemented in six phases from July 2013 to May 2015, comprising 53 translated modules as projected in Table 1. The aim of the project is to translate selected modules of Bachelor of -- in Business Administration (Honours) or BBA, Bachelor of Human Resource Management (BHRM) and Bachelor of Management (BIM) programmes from English to the Malay language. At OUM, CiDT is responsible for developing learning materials, including modules and video lectures.

Table 1: Total Number of Translated Modules for a Translation Project of CBM from July 2013 to May 2015

Phase	Development Time	Semester	Number of Modules by Cluster			Total
			CBM	CESS	CAS	
1	July – September 2013	September 2013	5	3	1	9
2	October – December 2013	January 2014	7	2	0	9
3	January – April 2014	May 2014	7	0	2	9
4	May – August 2014	September 2014	8	0	1	9
5	September – December 2014	January 2015	9	0	0	9
6	January – April 2015	May 2015	6	0	2	8
Total			42	5	6	53

Table 1 indicates that 42 modules are from CBM, 5 modules are from the Cluster for Education and Social Sciences (CESS) and 6 modules are from the Cluster for Applied Science (CAS). Although the 53 modules are for the translation project of CBM, some modules are from other Clusters whereby the same modules are being used as sharing modules for various programmes. However, the ownership belongs to certain Cluster. Out of these, 20 modules were selected for this research.

LITERATURE REVIEW

As we are discussing on translated modules, this section will cover mostly the opinions or previous studies done by scholars of translation studies. According to House (2018:2), among the factors to be considered in translation are the structural features, the expressive potential and the limitations of the two languages concerned with translation; the linguistic-stylistic-aesthetic characteristics of the source text and the target lingua-cultural community; the target language norms used by the translator; and the intertextuality based on the text in the target culture. In other words, the translator should appreciate the differences in language between the source text and target text. Translation is not as simple as it seems such as using Google Translate. Extensive editing is required if machine translation is used due to the many limitations such as culture, idioms, jargons and metaphors.

What is quality translation? Mossop (2014:227) defines quality translation as “the set of characteristics that make it fit or unfit for its future readers and the use they will make of it.” This means the quality of translated modules is to best fit the needs of the learners of OUM for better understanding the content of modules.

Characteristics or assessment of quality of translation can be done by referring it to the errors found in the translation based on the parameters. Quality has different meanings, depending on the eye of the beholder. That is the reason why, in producing models of translation quality assessment, scholars of translation studies use different parameters to measure the quality of translation. For example, Mossop (2014:134) uses 12 parameters and, in editing, it was said the most comprehensive so far. These parameters are divided into four major categories, based on problems as the following:

- (a) Problems of content which comprises (i) logic and (ii) fact;
- (b) Problems of meaning transfer which comprises (iii) accuracy and (iv) completeness;
- (c) Problems of language and style which comprises (v) smoothness, (vi) tailoring, (vii) sub-language (viii) idiom and (xi) mechanics; and
- (d) Problems related to visual rather than verbal which comprises (x) typography, (xi) organisation and (xii) layout.

Meanwhile, Angelelli (2009) uses scoring rubrics to measure the quality of the translators’ sub-competence based on four parameters. Firstly, linguistics, followed by textual. The third sub-competency is pragmatic. Finally, there is strategic competency. Each of these sub-competencies have its own weightage of scale from 1 to 5 whereby is the highest score given by rater.

How do we know whether a translated module has reached its targeted quality? In other words, is the translation good enough for the intended learners? According to Palumbo (2009:98):

The notion of quality concerns, in essence, how good or bad a translation is. As the evaluative judgement implied by this question can be applied to different aspects of a translation, quality is bound to be a relative notion. In other words, it depends on the specific needs, motivations and presuppositions of whoever is responsible for the assessment of a translated text.

House (2018:78) however believes that there are no clear guidelines of what is a good or bad translation:

One of the most intriguing questions asked in connection with translation concerns how to tell whether a translation is good or bad. This question cannot (and should not) be answered in any simple way, because any statement about the quality of a translation implies a conception of the nature and goals of translation, in other words it presupposes a theory of translation.

Newmark (1988:192) however defines that “a good translation fulfils its intention; in an informative text, it conveys the facts acceptably.” In a way, out of all the definition mentioned, a more practical approach is to apply Newmark’s opinion. In OUM, as a higher education provider we assess the translators’ competence by two parameters, namely grammar and accuracy of content. This, we believe will be easier for the raters, such as the academics, to rate the translation. Most importantly, the translation has been translated adequately so that it conveys the facts acceptably to the learners. By having these modules, in the long run, learners will have deeper knowledge as well as might have a better chance of answering exam questions. If modules are prepared only in English, maybe some learners will not gain and benefit from the translated version due to language barriers.

RESEARCH OBJECTIVES

The objectives of this paper are to:

- (a) Determine whether a relationship exists between the quality of translated modules and the translators’ qualifications; and
- (b) Identify to what extent a qualification in translation is necessary to produce quality-translated modules.

The findings from this study would provide useful insights to strategies on the selection of translators for translated modules, thereby ensuring the learners will benefit from quality-translated modules. This in turn will help marginalised learners who are less proficient in English to have access to knowledge via modules accurately translated into the Malay language.

METHODOLOGY

This study implies mixed of qualitative and quantitative methods. The data collected for this study include observation of ratings (score) of pre- and post-editing works and analysis of textual descriptive using MS Word and MS Excel software. Twenty out of fifty three samples were selected due to the following reasons: time constraint, limited complete documentation and current active programmes. It provides summaries about the sample and the measurement being used to form the basis of the quantitative analysis data, including mean and median. Regression analysis and correlation analysis were conducted but found to be unsuitable for this study due to the involvement of many variables in comparison to the small number of data.

The calculation of rating was derived from the Module Inspection Report (Translation) or rating form divided into two subsections: grammar and accuracy of content. The grammar subsection looks into the quality of grammar in the Malay language that is free from mistake. The editor then evaluates the level of grammar based on the house style and also other references such as *Kamus Dewan* (2005), *Kamus Inggeris-Melayu Dewan* (2013), *Pusat Rujukan Persuratan Melayu* (PRPM) and *Tatabahasa Dewan* (2008).

The next subsection is on accuracy of content, meaning to say the Malay translation does not have to be an exact word-for-word because the two languages have different idiomatic systems, but the translation must carry the closest possible meaning to the original. Examples of accurate translation mention in the form are as follows:

E.g. 1

- *Pendedahan kepada bahan kimia ini boleh membuat anda muntah.*
- Exposure to this chemical can make you sick.

E.g. 2

- *Dari segi teori, perbezaan yang ada boleh diabaikan.*
- Theoretically, the differences are insignificant.

FINDINGS AND DISCUSSIONS

As a certain budget has been allocated to translators in providing translated Malay modules to cater to the needs of OUM learners, competent translators must be one of the main selection criteria. Poor translation quality could affect a business image or a learner capability to sufficiently understand the meaning and context as well as actual word and phrase being translated. In this study, 20 modules (see Table 2) have been selected as a pilot study to gauge the effectiveness of the system being used and to determine whether having translators with professional certificate or appropriate background could improve the current method. Criteria for the selected modules are based on the translators' qualifications, translation background and work experience.

Table 2: Codes and Module Titles of 20 Selected Translated Modules

Code and Module Title	
• BBNG3103 Perniagaan Antarabangsa	• BPCP4103 Perancangan dan Pembangunan Kerjaya
• BBGO4103 Gelagat Organisasi	• BBIH4103 Pengurusan Sumber Manusia Antarabangsa
• BBPW3203 Pengurusan Kewangan II	• BBAW2103 Perakaunan Kewangan
• BBRM4103 Pengurusan Runcit	• BBK1103 Prinsip Mikroekonomi 1
• BBSG4103 Pengurusan Pemasaran dan Strategi	• BBKI4103 Pengurusan Kewangan Islam
• BBPM2103 Pengurusan Pemasaran I	• BBBM4103 Pengurusan Bank
• BBMP1103 Pengurusan Matematik	• OUMM2103 Keusahawanan
• BBPR2103 Perancangan, Pengambilan dan Pemilihan Sumber Manusia	• SBST1303 Statistik Asas
• BBMR4103 Perhubungan Industri	• CBMS4303 Sistem Maklumat Pengurusan
• CBCT2203 Konsep Asas Teknologi Maklumat	
• BBIF4103 Kewangan Antarabangsa	

A good translation is where the translator understands the context of the message he or she is trying to get across as well as being well-versed in the cultural nuances of both languages and exposed to the industry in which it is related to, in addition to being loyal to the original text, thus following the functionalist approach recommended by Nord (2018). Learners of OUM sometimes compare the original text and the translated text when they could not understand some terms or important content.

Translation work also need to go through stringent checks to ensure modules produced are of good quality. As such, the university has selected qualified translators to translate the original work into other languages. Their translations were rated by academics from OUM to ensure quality is met before being published. Table 3 shows the ratings received by the appointed translators for the selected 20 modules. Bear in mind, that the name of the translators for the selected modules are not revealed in this paper for ethical purposes and to avoid making associations between the module and translator.

Table 3: A Sample of 20 Translators' Backgrounds and Their Ratings

Translator	Highest Qualification and Translation Background	Work Experience	Rating (%)
1	PhD in Organisational Behaviour	Academic	93
2	PhD in Organisational Behaviour	Academic	76
3	PhD in Accounting and Finance	Academic	93
4	Master of Arts (Translation Studies)	Industrial practitioner	67
5	Master of Business Administration	Academic	89
6	Master of Business Administration	Academic	100
7	Bachelor in Translation and Interpretation	Industrial practitioner	93
8	Bachelor in Business/Management	Industrial practitioner	80
9	Bachelor in Law, Shariah Law	Academic	86
10	Bachelor of Education (Teaching English as a Second Language) and Certificate in Translation (Institut Terjemahan Negara Malaysia)	Industrial practitioner	87
11	Master of Science in Corporate Communication	Industrial practitioner	80
12	Master of Human Science (International Relations)	Industrial practitioner	93
13	Master of Business Administration	Academic	93
14	PhD in Economics	Industrial practitioner	93
15	PhD in Islamic Banking	Academic	88
16	PhD in Accounting and Finance	Academic	92
17	Master of Education (English as a Second Language)	Industrial practitioner	77
18	PhD in Mathematics	Academic	93
19	Master of Information Technology	Academic	93
20	Master of Information Technology	Academic	93

Based on Table 3, the highest education level is a PhD holder whereas the minimum requirement is a degree holder. Their work experience are either academic or industrial practitioner. To get a better grip of the highest qualification of translators, refer to Figure 1. This figure shows that there are 30% (6) academics and 5% (1) industrial practitioner with PhD qualification. Meanwhile, 25% (5) of academics and 20% (4) of industrial practitioners possess Master's degree. The remaining 5% (1) is an academic and 15% (3) are translators with a Bachelor's degree.

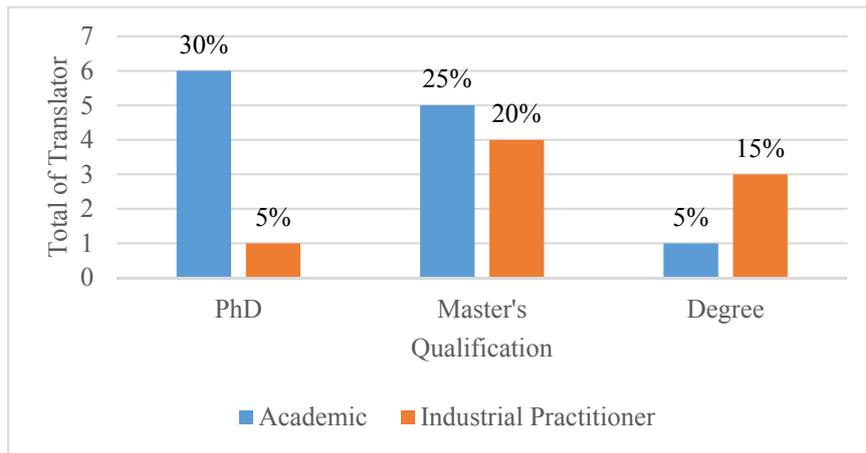


Figure 1: Highest Qualification of Translators

Each translator’s work background has been carefully scrutinised to suit the learners’ needs, thus 60% (12) of the translators are academics who have experience in educational industry and 40% (8) comes from the industrial background with expertise in their relevant field as illustrated in Figure 2.

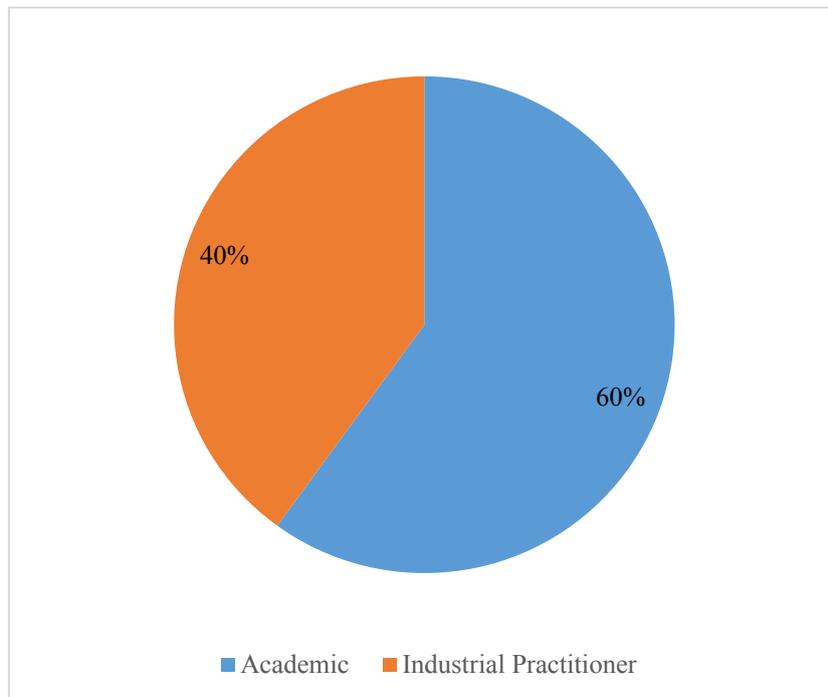


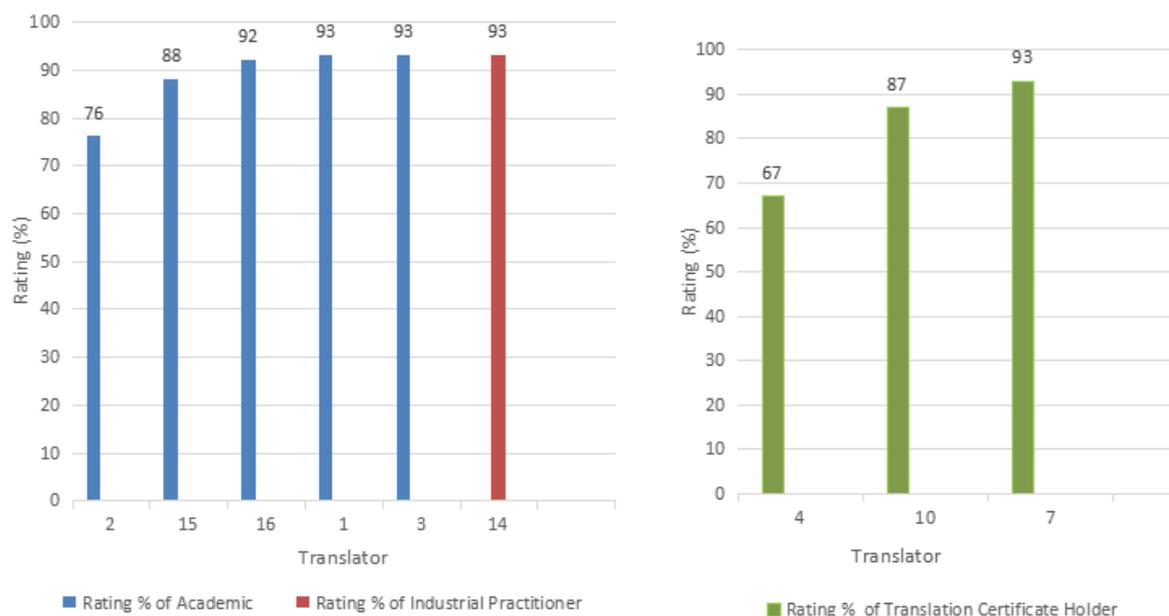
Figure 2: Work Experience of Translators

Meanwhile, Table 4 shows the breakdown in terms of translation background. From this table, it shows that none of the academics involved in the translation project had a certified qualification in translation. While some of those from the industry are certified translators. Out of eight industrial practitioners, only three are certified translators as well.

Table 4: Translators with translation background

Highest Qualification	Academic with Translation Background	Academic without Translation Background	Industrial Practitioner with Translation Background	Industrial Practitioner without Translation Background	Total
PhD	0	6	0	1	7
Master's	0	5	1	3	9
Degree	0	1	2	1	4
Total	0	12	3	5	20

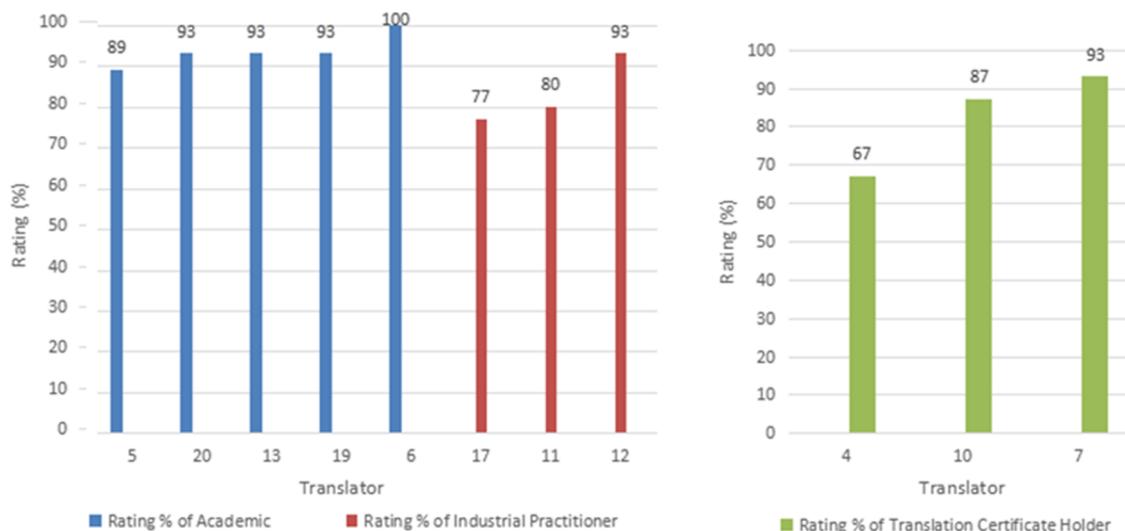
Figure 3 compares the ratings between translators with PhD and certified translators. The following are the findings. In terms of mean, the mean rating for PhD holders is 89, while those who are certified translators had a mean rating of 82. The median for PhD holders is 93 and the median for certified translators is 87. Hence, on average, the translators met the quality criteria required.



(a) Translators with PhD (b) Translators with Translation Qualification

Figure 3: Comparison of Ratings between Translators with PhD and Translators with Translation Qualification

In the meantime, Figure 4 depicts the comparison between translators with Master's degree and certified translators. The findings are as follows. In terms of mean, the mean rating for translators with Master's qualification is 90, while those who are certified translators had a mean rating of 82. The median for Master's degree holders is 93 and the median for certified translators is 87. Thus, translators with translation certificate are able to produce work almost of similar quality to those holding higher academic qualification. Both categories are able to produce grammatically correct and accurate content compared to the original text in English.



(a) Translators with Master's Degree (b) Translators with Translation Qualification

Figure 4: Comparison of Ratings between Translators with Master's Degree and Translators with Translation Qualification

In this study, we have extracted some samples examples of text to show the differences between a good translation work which received a high rating (refer to Example 1) and not so good translation work, which received a low rating (refer to Example 2).

Example 1:

Original text:

How does a final consumer make a decision? You can understand by looking at it as a process. In the process of decision making, there are five stages, as shown in Figure 7.3. You need to remember that these processes occur in the mind of the consumer.

Translation version:

Bagaimanakah pengguna akhir membuat keputusan? Anda boleh memahami dengan melihat ia sebagai satu proses. Dalam proses membuat keputusan, terdapat lima peringkat, seperti yang ditunjukkan dalam Rajah 7.3. Anda perlu ingat bahawa proses ini berlaku dalam fikiran pengguna.

Final translated text:

Bagaimanakah pengguna akhir membuat keputusan? Anda boleh memahami dengan melihatnya sebagai satu proses. Dalam proses membuat keputusan, terdapat lima peringkat, seperti yang ditunjukkan dalam Rajah 7.3. Anda perlu ingat bahawa proses ini berlaku dalam fikiran pengguna.

In Example 1, the term *looking at it* was translated into Malay language as *melihat ia* but the final translated text after editing process became *melihatnya*. This is to follow the norms and conventions of the targeted language.

Example 2:

Original text:

The number of independent retailers has increased because of ease of entry, but the ease of entry that leads to intense competition is a big factor for the high rate of failures among newer firms. This is because ease of entry is caused by low capital requirements, and no or relatively simple, licensing provisions and low investment per worker. Independent retailers have a variety of advantages and disadvantages as illustrated in Table 3.1 and Table 3.2.

Translation version:

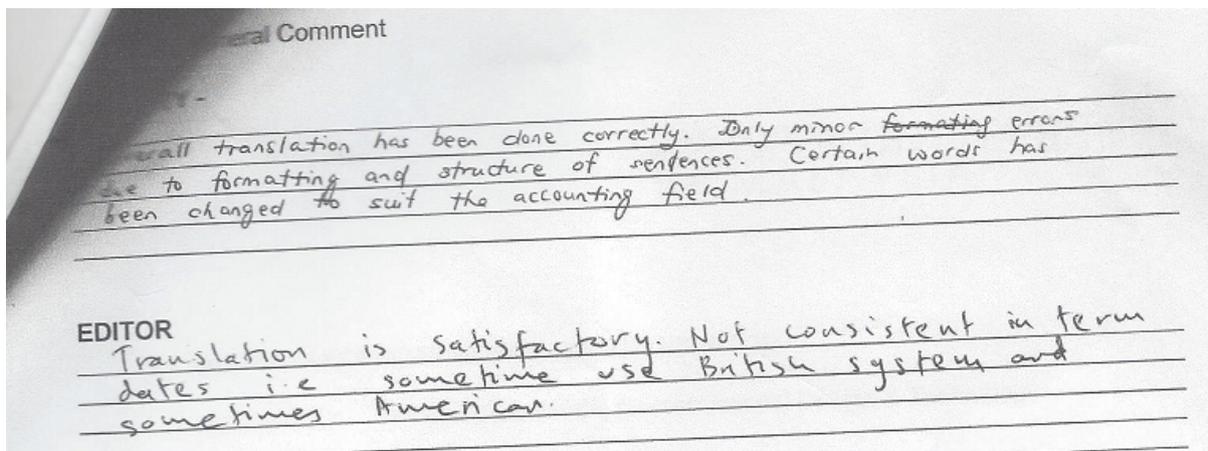
Bilangan peruncit bebas telah meningkat kerana mudah untuk masuk, tetapi memudahkan penyertaan yang membawa kepada persaingan sengit adalah satu faktor yang besar bagi kadar yang tinggi kegagalan di kalangan firma-firma yang lebih baru. Ini kerana memudahkan kemasukan adalah disebabkan oleh keperluan modal yang rendah, dan tidak ada atau agak mudah, peruntukan pelesenan dan pelaburan yang rendah bagi setiap pekerja. Peruncit bebas mempunyai pelbagai kebaikan dan keburukan seperti yang ditunjukkan dalam Jadual 3.1 dan Jadual 3.2.

Final translated text:

Bilangan peruncit bebas telah meningkat kerana mudah untuk masuk tetapi penyertaan yang mudah inilah yang mengakibatkan persaingan sengit; ini ialah faktor utama terdapatnya kadar kegagalan yang tinggi dalam kalangan firma yang lebih baharu. Terdapat banyak sebab bagi kemudahan kemasukan termasuklah keperluan modal yang rendah, dan dari segi lesen pula tiada lesen diperlukan atau syaratnya agak mudah mendapat lesen dan pelaburannya rendah bagi setiap pekerja. Peruncit bebas mempunyai pelbagai kebaikan dan keburukan seperti yang ditunjukkan dalam Jadual 3.1 dan Jadual 3.2 berikut.

From Example 2, no or relatively simple, licensing provisions when translated to is more readability and easier to understand when translated to dari segi lesen pula tiada lesen diperlukan atau syaratnya agak mudah mendapat lesen (final translated text) than tidak ada atau agak mudah, peruntukan pelesenan (translation version). Thus, the final translated text shows a better sentence has been structured and makes more sense than the translated version.

Example 3: Translator 13



Translator 13 in Example 3 is an academic with a Master’s degree who received 93% rating. Hence, the translator is familiar with the subject of the module, the translator seems to get the best words to replace the original text especially when it comes to jargon words in the specific field.

Example 4: Translator 14

Note (s) / General Comment

FACULTY -
Translation was done with careful understanding of content, meaning and well prescribed. knowledgeable translator.

EDITOR
Some spelling mistakes were detected and sometimes the terms are not standardised. I agree with the payment rate recommended by the faculty.

In Example 4, Translator 14 is an industrial practitioner with a PhD but without a translation background and was rated 93% which is a high rating. Good comments received from both parties despite some errors were detected at the module which had been checked and corrected by the editor.

The final translated text involves many agents (Milton & Bandia, 2009:1). Agent is a term use to a person who is “in an intermediary position between a translator and an end user of a translation” (Sager, 1994:321 in Shuttleworth & Cowie, 2014:7). To name a few, agents in this research are translator, instructional designer, editor, graphic designer, desktop publisher, quality controller and academics which happens to be the subject matter expert from the respective Cluster. Thus, in all stages involved, all agents tried their best to play their role in producing good translated modules. This claim is shown based on Examples 1 and 2 which differentiate the translation version and comparing it with the final translated text. Although translators initiated the work, only through team work, a good module can be produced.

LIMITATION OF STUDY

This paper focused on 53 modules of a translation project of CBM and out of this, confined to a sample of 20 modules been selected. These translators were chosen from various backgrounds, either with translation or non-translation qualifications. Nevertheless, the minimum requirement is to possess a degree.

CONCLUSION

As OUM’s modules are in PDF format, they can be viewed and downloadable through online platform, thus they are more assessable and user friendly to learners of OUM. This research finding shows that a relationship does exist between the quality of translated modules and the translators’ academic qualifications. The higher the translators’ qualification is the better job they might produce. A total of 17 out of 20 translators scored higher than 80%. Based on this research, qualification in translation is necessary to produce quality-translated modules as they are more knowledgeable about translation. The methodology used in this study to identify the background and qualification of translator with the quality of translated module has achieved its target. Most of the translators appointed are competent based on the ratings received by academics. In line with that, translators which received good ratings can be listed in the pool of competent translators to further enhance the quality of translated modules. In order to get a better result of this study, it is suggested that the minimum highest qualification of a translator is a Master’s degree in his or her relevant field or at least a diploma or degree in translation. However, it is preferable for OUM translators to have at least a PhD qualification in the related field or with a PhD in

translation studies to be involved in translation. These translators are more familiar with research as the translators need to do research from time to time to get the best possible translation and have an in-depth knowledge in the subject being translated. Nevertheless, good editors also play a big role here in producing good translated modules.

RECOMMENDATIONS

Translators who have good ratings can be listed in the pool of competent translators. To measure the quality of the end product, which is the translated module, one of the model of translation quality assessment produced by scholars of translation studies could be implemented on the modules. For example, the model of translation quality assessment by House (2015) which differentiates between covert translation and overt translation. “A covert translation is a translation which enjoys the status of an original source text in the target culture” (House, 2018:89). An overt translation is a translation that reflects the original text culture. As the experiment only uses small sample, it is suggested that in the future to use corpus or bigger set of sample. Further research can also be done to study the perception of learners regarding the translated modules.

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EDUCATING THE B40 GROUP OF SOCIETIES TOWARDS A SUSTAINABLE ENVIRONMENT: A CASE STUDY ON RUKUN TETANGGA JELAPANG'S ACHIEVEMENT

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ABSTRACT

This paper presents the findings made on a research carried out in Jelapang Tambahan, Ipoh, Perak. There are 220 households, mostly from B40 category families, and was identified as one of the dengue-prone villages in the Kinta District. A total of 4,812 dengue cases were detected at end of November 2014 with 13 fatalities, of which some of the fatal cases came from this village. The villagers were ignorant of the importance of keeping the environment clean. Twelve (12) illegal dumpsites were detected in this village prior to the start of this research. An action committee was formed which comprised representatives from Rukun Tetangga Jelapang, the Solid Waste Management Corporation and Ipoh City Watch, with the role of educating the Jelapang Tambahan folks through a series of campaigns and recycling projects. Using Ajzen and Fishbein (1980)'s Theory of Planned Behaviour Model as a guiding factor and Kolb (1984)'s Experiential Learning Theory, the education project via Trash-to-Cash sustainable recycling was launched on 4 April 2015. A collection centre within the community was established where participants were requested to turn in their recyclables twice a month in exchange for cash. Recyclables collected were segregated, weighed and recorded every month from April 2015 to November 2016. Contributors were paid cash in exchange for the recyclables brought to the centre. The data collected were then tabulated and analysed to establish the trend. Results obtained showed that a total of 8,900 kg of recyclables have been collected giving the participants a supplementary income of RM3,850. The 12 illegal dumpsites prior to the start of the project have disappeared, fatal dengue cases had dropped drastically, and the recycling rate was 13.1% which is higher than the national rate of 10% in 2016. Thus, the outcome of this study can help create an impact to the society by changing their behaviour if the right approach is used to educate them.

Keywords: *Lifelong Learning, Sustainable Development Goals, Social Business, Trash-to-Cash Recycling System*

INTRODUCTION

Jelapang Tambahan, a small village located at the outskirts of Ipoh, comprised 220 households with an estimated population of 1,000, the majority of whom are from the bottom 40 percent (B40) group of people. Sixty percent (60%) of the population here are of Indian ethnic group followed by 30 percent Chinese and 10 percent Malay. The residents here have set up the Rukun Tetangga Jelapang under the Department of National Unity and Society Integration to help foster good relationship and to care for their safety and health.

In February 2014, the Perak Health Director has reported that there was a huge jump in dengue cases in Perak with 820 cases compared with 242 cases the previous year. Kinta district where Jelapang Tambahan is located, has the highest with 484 cases. By November 2014, the number of dengue cases in Perak rose to 4,812 with 13 fatalities and the district of Kinta recorded a total of 2,650 cases making it the highest in Perak (The Star, 19 Nov. 2014). Some of the fatal cases in the Kinta District are from Jelapang. In early 2015, Perak recorded a 138 percent jump in dengue cases in the first seven weeks compared to the same period the previous year with five fatal cases.

Ipoh City Watch (ICW), a non-governmental organisation (NGO), headed by the researcher, mooted a cleanliness campaign together with Perak Solid Waste Management Corporation (SWCorp) and Rukun Tetangga Jelapang (RT). A meeting was held in February 2015 to plan for the campaign which included educating the villagers on cleanliness and recycling. On 4 April 2015, the Trash-to-Cash Recycling project was launched at Jelapang Town Hall organised by RT.

Several programmes were held at the village to show how they could segregate the garbage into organic waste, recyclables and trash. The villagers were also taught how to compost their organic wastes and plant vegetables. A recycling collection centre was also established in this village for the convenience of the people. A recycling bin was installed for villagers to drop their recyclables. House-to-house campaigns were also organised together with the Health Department to educate the villagers on the importance of keeping their environment clean and the danger posed by dengue.

Recyclables brought in by the villagers twice a month were weighed according to three main categories; paper, tin and plastics. They were paid based on the weight of each item. These data were recorded for the purpose of finding the impact of the intervention carried out.

Thus, this paper will present the findings of the research and its impact on the community in line with United Nation's Sustainable Development Goals.

Problem Statements

As mentioned above, the research project was triggered by the alarming dengue cases affecting Perakians in general and the people of Kinta District specifically where 13 fatalities were recorded in November 2014. A gotong royong conducted by Ipoh City Watch together with the Health Department of Perak found many illegal dumpsites, hoarders and low awareness among residents on the need to keep the environment clean.

A few fatal dengue cases were found in Jelapang where the project was mooted. Prior to the start of the recycling project, a total of 12 illegal dumpsites were found in Jelapang Tambahan. Recycling activity was low with some residents doing it voluntarily.

There were about 220 households in Jelapang Tambahan. According to Perak Solid Waste Management Corporation, generally each household produces an average of 5kg of garbage per week. Thus the amount of garbage generated by Jelapang Tambahan folks is estimated at 52,800 kg per year.

LITERATURE REVIEW

According to Funnell et. al. (2011), the Theory of Planned Behaviour, an extension of the Theory of Reasoned Action (Ajzen & Fishbein, 1980) is based on the notion that ‘humans are rational and have control over what they do.’ They added that the intentions predict their behaviours, if the intentions and the behaviours are defined and measured using the same concepts in relation to the nature and target of the action, and the timing and context of behavior.

Ajzen and Fishbein (1980) posited that a person’s intentions to behave in a particular way is influenced by his/her beliefs about the likely consequences of behaviour, attitudes (whether positive or negative feelings) towards the behaviour and the consequences of the behaviour, and perceptions of norms that is perception of others’ opinions about the behavior (see Figure 1 below).

According to Carreras et. al. (2013), attitudes can be activated via a deliberately controlled process when a person is motivated and has sufficient cognitive capacity for processing the information.

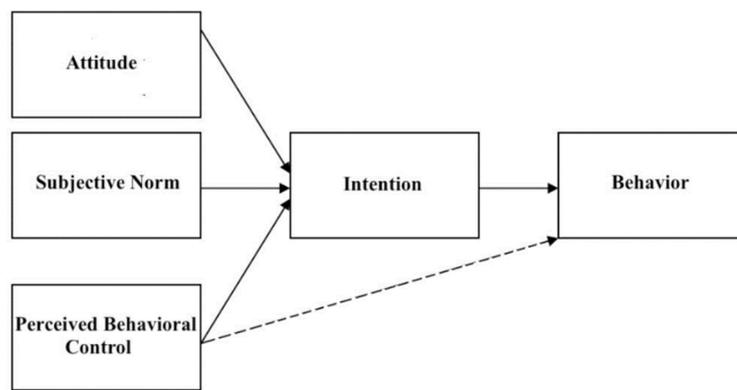


Figure 1: The Theory of Planned Behaviour (Ajzen & Fishbein, 1980)

The Theory of Planned Behaviour by Ajzen and Fishbein (1980) presents mechanisms that turn attitudes into behaviours whereby; it establishes that an intention or disposition to act is the key variable of the behaviour’s explanatory mechanism and it identifies the drivers of behavioural intention that give rise to different mechanisms affecting the disposition to act (reputation itself, convenience, group pressure, moral obligation and perceived self-efficacy). Each of these factors explains the reasons that determine an individual’s decision to support a project.

However, Lazaruz (2006), pointed out that an intention is activated by these drivers only when an emotional element is involved. These include; strong positive evaluation, favourable normative pressure (social or personal), awareness of self-efficacy and a positive emotional reaction towards the project.

Before the people’s mindset can be changed by changing their behavior to make the recycling project in Jelapang Tambahan works, they have to be educated, taught and shown how and why the recycling project has to be carried out. The project requires their cooperation, support and involvement. The Kolb Experiential Learning Style approach was adopted to educate the people in line with the concept of lifelong learning and acquiring skills and knowledge in the 21st Century where the world is the classroom.

According to Kolb (1984), ‘learning is the process whereby knowledge is created through the transformation of experience’. He added that learning involves the acquisition of abstract concepts that can be applied flexibly in a range of situations. In his theory, the impetus for the development of new concepts is provided by new experiences. Kolb’s experiential learning theory works on two levels: a four-stage cycle of learning and four separate learning styles.

Kolb's four-stage of learning involves; **Concrete Experience** – (a new experience or situation is encountered, or a reinterpretation of existing experience), **Reflective Observation of the New Experience** – (any inconsistencies between experience and understanding), **Abstract Conceptualisation** (reflection gives rise to a new idea, or a modification of an existing abstract concept the person has learned from their experience), and **Active Experimentation** (the learner applies their idea(s) to the world around them to see what happens (Kolb, 2015).

According to McLeod (2014), much of Kolb's theory is concerned with the learner's internal cognitive processes. He added that effective learning only occurs when a learner can execute all four stages of the model which include; (1) having a concrete experience followed by (2) observation of and reflection on that experience which leads to (3) the formation of abstract concepts (analysis) and generalisations (conclusions) which are then (4) used to test hypothesis in future situations, resulting in new experiences.

According to Peterson et. al. (2017), most people have a strong preference for one learning style and tend to avoid or underutilise certain styles. There are nine learning style in the Kolb Experiential Learning Style Inventory, which gave a person access to his/her capabilities to successfully manage any situation and learn from it. The nine learning styles are; Experiencing style, Imagining style, Reflecting style, Analysing style, Thinking style, Deciding style, Acting style, Initiating style, and the Balancing style.

According to McLeod (2014), both Kolb's (1984) learning stages and cycle could be used by teachers to critically evaluate the learning provision typically available to students, and to develop more appropriate learning opportunities. He added that educators should ensure that activities are designed and carried out in ways that offer each learner the chance to engage in the manner that suits them best.

In guiding the villagers or participants of the recycling project at Jelapang Tambahan, Knowles' (1984) four Principles of Andragogy was also referred. The four principles are; adults need to be involved in the planning and evaluation of their instruction, experience (including mistakes) provides the basis for the learning activities, adults are most interested in learning subjects that have immediate relevance and impact to their job or personal life, and adult learning is problem-centered rather than content-oriented.

Training and coaching the adult participants is based on adult learning assumptions postulated by Knowles (1984) which include; adults are self-directed, their own experience becomes a source of learning, they are ready to learn, their learning orientation is problem-centred, and they have internal motivation to learn.

METHODOLOGY

The objective of this research is to find the impact of intervention carried out on a village so as to help cultivate the recycling culture, reduce garbage from going to landfills or illegal dumpsites and reduce dengue and other related diseases.

The intervention in this project involves educating the participants in Jelapang Tambahan based on the Theory of Planned Behaviour (Ajzen & Fishbein, 1980), Kolb's (1984) Experiential Learning Theory and Knowles' (1984) four Principles of Andragogy.

Intervention carried out include educating the participants of the recycling project in Jelapang Tambahan about the importance of environmental cleanliness and recycling. Prior to the start of the project in early 2015, dengue cases were reported at an alarm level with some fatal cases in this village, majority of whom belongs to the B40 group and generally low in literacy rate. There were 12 illegal dumpsites with several hoarders storing garbage in unoccupied houses.

As most of the residents are members or part of the RT Jelapang team, the main committee members were called in to assist as partner of the project. The researcher who is also the Chairman of Ipoh City Watch, roped in Perak SWCorp and Perak State Health Department to collaborate and assist in the campaign. Several meetings were held to plan for the house-to-house campaign in order to get the residents understand and support the project. On 4th April 2015, the recycling project was launched at the Jelapang Town Hall participated by about 200 people.

During the launch, the participants were asked to bring in their recyclables. A briefing session was held explaining how their recyclables are to be segregated. They were also informed of the collection centre and collection schedule. Those who brought their recyclables have their contribution recorded and paid.

Leaflets and house-to-house campaign were carried out twice a month for the first two months to educate the residents. The residents were also assembled from time to time especially on collection day to do more briefing and training on how and why they must practice recycling. Several community programmes cum education training including Pongal, Deepavali, Mother's Day celebration, and Father's Day celebration were organised in this village to engage them and also to appreciate their support. Teaching and learning took place either at the collection centre or via house-to-house briefing and leaflet distributions and also during festive programmes to explain the progress of the recycling projects.

Recyclables brought in to the collection by the participants twice monthly were recorded from April 2015 to November 2016. The results are tabulated and analysed. Its impact was measured in terms of recyclables weight, amount paid out and recycling rates.

The recycling rate was calculated based on the assumption that every household generates an average 5kg of garbage per week or 20kg per month. The total garbage generated from Jelapang Tambahan per month is estimated as 20 x 220 or about 4,400kg. The recycling rate is then obtained by dividing the total amount of recyclables collected by the total garbage generated by the residents. Pre and post interventions were compared to gauge its impact.

FINDINGS

About 30 percent of the 220 households have contributed towards this project. Others surveyed did contribute to other recyclers and charity organisations which came to their weekly routine collection. At the end of November 2016, the 12 illegal dumpsites have vanished. Dengue cases dropped drastically with no fatal cases reported.

Figure 2 below shows the amount of recyclables contributed by participants of Jelapang Tambahan through 20 collections from April 2015 to November 2016. A total of 8,900kg of recyclables were collected during that period consist of various categories of papers, plastics and metals.

Between April 2015 to December 2015, regular interventions were carried out to see the impact on the contribution of recyclables. From January 2016 until November 2016, the residents were then left to the RT committee to manage. It was found that the monthly contribution has stabilised with average of 400kg collection of recyclables per month.

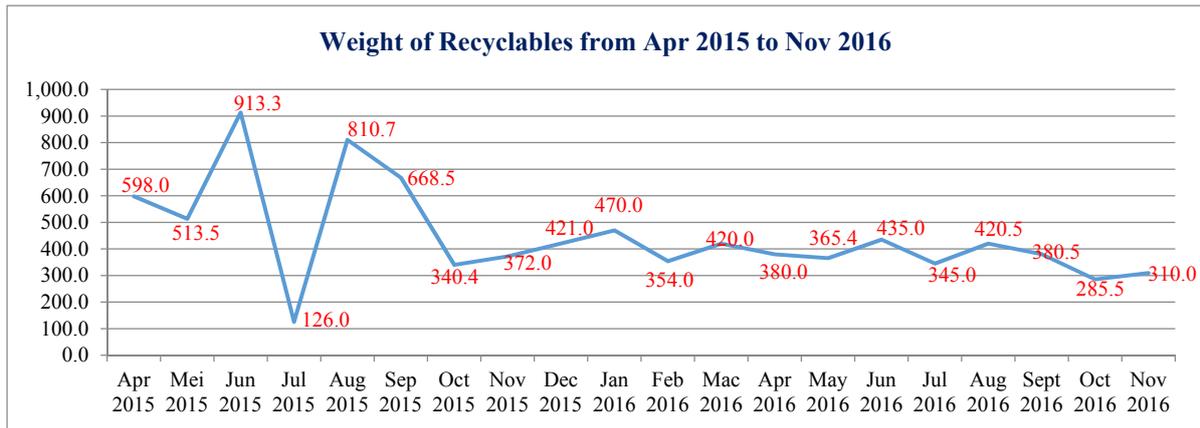


Figure 2: Total Weight of Recyclables from April 2015 to November 2016

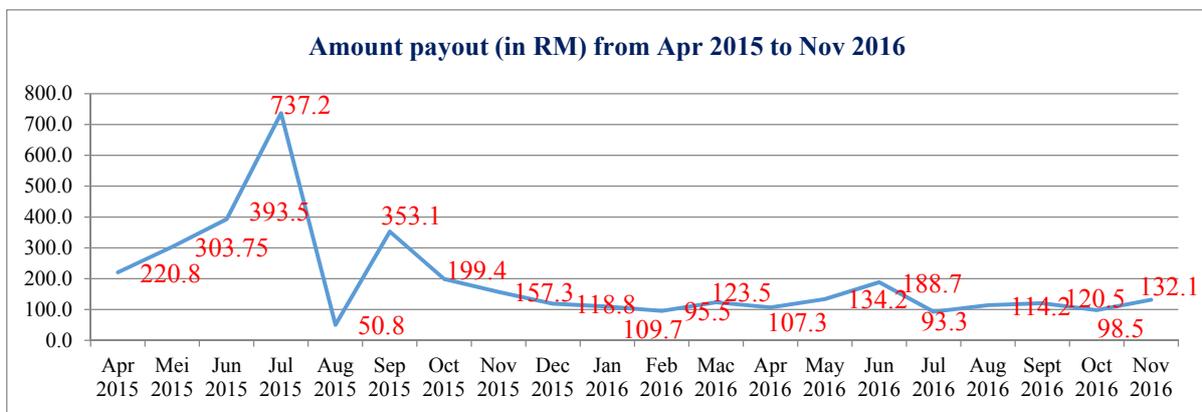


Figure 3: Total Amount Paid Out for Recyclables Collected from April 2015 to November 2016

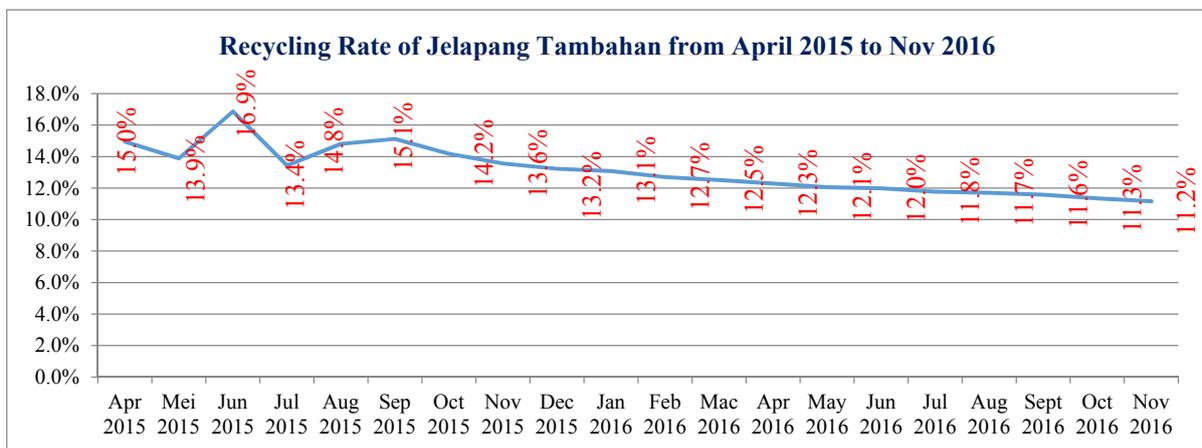


Figure 4: Monthly Recycling Rate Tracking from April 2015 to November 2016

Figure 3 above shows the distribution of amount of cash paid for the recyclables contributed by participants from April 2015 to June 2016. The total amount paid out during period was RM3,850.00. The amount paid corresponds to the contributions made.

Figure 4 above shows the recycling rate of Jelapang Tambahan from April 2015 to November 2016. The average recycling rate was 13.1 percent which is higher than the national average recycling rate of 10 percent.

DISCUSSION AND CONCLUSION

A total of 8,900kg of recyclables has been contributed by the residents of Jelapang Tambahan from the date it was launched in April 2015 to November 2016. This means that 8,900kg of garbage has been successfully reduced from ending up in the landfill or illegal dumpsites. It also means a saving for the Ipoh City Council of 8,900kg x RM0.30 or RM2,650.00 per year which was normally paid to contractors that collect and send the garbage to the landfill.

The reduction of garbage helps in reducing global warming and climate change as garbage at landfills produce carbon dioxide and methane gas that cause temperature to rise. Thus our efforts together with the community helped to address SDG goal #13 – climate change (see Figure 5 below).

The corresponding amount of RM3,850.00 paid to the contributors of Trash-to-Cash recycling project is very much appreciated by the poor residents as it helps supplement their income. This is fulfilling SDG goal #1 – eradicating poverty and SDG goal #2 – zero hunger.

Illegal dumpsites have vanished and the village is much cleaner today as a result of the awareness campaign and sustainable Trash-to-Cash recycling system which the residents continue to do until today. Dengue cases have dropped and there is no fatal case reported. Thus the project has addressed SDG goal #3 – good health and well-being and SDG goal#15 – life on land.

Recycling helps to reduce plastics from ending up in river and ocean thus helps life under water which is SDG goal # 14.



Figure 5: Sustainable Development Goals

The overall results showed that the Ajzen (1980)’s Theory of Planned Behaviour works in the community. The training and education approached provided to the participants by going down to the community and showed them how the recycling project should be carried out via Trash-to-Cash system using Knowles (1984)’s andragogy learning and Kolb (2015)’s experiential learning approach have successfully guided the participants. This fulfills the SDG goal #4 – providing quality education through Lifelong learning. This is very much in line with the concept of education in the 21st century where the world is the classroom.

The project has caught the attention of Junior Chamber International Malaysia in collaboration with United Nations Asian Residence. It won the “Best of Best” and “Best in Climate Change” JCIM SDA 2018 awards in September 2018. The project has also helped Rukun Tetangga Jelapang emerged as the best Social Business economy project in 2018 as the supplement income generated by RT Jelapang as a partner in this project helps fund their activities.

ACKNOWLEDGMENT

We wish to thank the committee members of Rukun Tetangga Jelapang especially the chairman, Mr. Thinakaran and advisor Mr. Pandian, the residents of Jelapang Tambahan led by Madam Ninderjeet Kaur who have allowed us to use her place as collection centre, Director of Perak SWCorp, Puan Hajah Fatimah Ahmad, Perak Health Department team, my Ipoh City Watch committee members and all volunteers who have joined us in carrying out the campaign successfully over the last 3 years.

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EXPLORING FACTORS AFFECTING POSTGRADUATE STUDENT RETENTION WHEN ENROLLING VIA ACCREDITATION FOR PRIOR EXPERIENTIAL LEARNING (APEL)

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ABSTRACT

Retaining of postgraduate Masters Degree students' are often scrutinised, as are subsets of graduate students such as under represented populations. However, little emphasis is placed on the largest component of graduate education, namely, students enrolled in master's degree programmes. When a student registers in an academic programme at a university, both enter into a partnership intended to culminate with the student earning a masters degree awarded by the institution. Both have responsibilities in this partnership, students must put in the effort to complete the intended programme successfully, while institutions must provide appropriate resources to allow students to succeed. An increasing number of students are enrolling in the Master Degree programmes through Accreditation of Prior Experiential Learning (APEL) in Open University Malaysia (OUM). Although students enrol into a programme for a variety of reasons, their completion rate for the Masters programme does not commensurate with the initial enrolment numbers. The purpose of this research is to explore factors affecting postgraduate students' retention when enrolling via accreditation of prior experiential learning (APEL) in Open University Malaysia. Results will be analysed through a series of descriptive statistics of factors like; 1) self-motivation and 2) academic performance that contributes to the students' commitment to stay in their programmes. This study is important as it aids open distance learning institutions to remain sustainable.

Keywords: *Open and Distance Learning, Student Retention, APEL, Self-motivation, Academic Performance*

INTRODUCTION

Many institutions pay close attention to undergraduate recruitment and retention, in contrast to the lesser emphasis placed on graduate enrolment. Little emphasis is placed on the largest component of graduate education, namely, students enrolled in master's degree programmes. When a student registers in academic programmes in a university, they are both entering into a partnership. Both have responsibilities in this partnership; students must put in effort to complete the intended programme and the institution must provide appropriate resources to allow students to succeed.

The establishment of ODL institutions as an enabler to education is widely accepted. However minimal research is available to support students’ learning in ODL (Dzakiria, 2006; Mannan, 2007; Serwatka, 2005; Sweet, 1986). Despite extensive improvements and developments in Open and Distance Learning (ODL), student dropout or attrition rates in ODL around the world continue to be very high and reportedly to be in the range of 30% – 45%. Various reasons and factors have been associated with the attrition rate in ODL but the strongest ones are linked to the learner demography (i.e age factors, digital divide, etc) which may very likely attribute to the statistics (Harold & Russum, 2000; Dzakaria, 2006; Hara & Kling, 2001; Hughes, 2004; Kember, 1989; Mannan, 2007; Wickersham & Dooley, 2001).

Some researchers have proposed that academic integration mediates the relationship between a variety of social factors and academic performance (Bean & Eaton, 2001; Cabrera, Nora & Casteneda, 1993; Rivas, Sauer, Glynn, & Miller, 2007). Even previous research has established that both academic motivation and academic integration are related to academic performance, the present study focuses on how academic motivation and academic integration work together to predict academic performance. Although a large body of evidence regarding context specificity in performance and learning can be cited to contradict a generalised learning theory (Smith, 1995; Smith et.al, 1994), it is likely that the latter viewpoint still plays an influential role in educational policy development and decision making. The failure to support students and satisfy their needs in learning may increase the number of non-completion rates and increase the push factor to non-completion in the respective institutions.

Open University Malaysia learning centre in the Seberang Jaya has a registered total of 553 postgraduate students in various master’s programmes since 2004. The study duration for a Master’s Degree is 2 years based on the university designed programmes. From the total number of students registered, 370 of them have been in the system for more than 2 years. From the total number of registered post graduate students, only 183 students are within the two year time frame of study. Of the 370 students, only 24 percent are active students. Only 41 percent graduated, 24 percent are active, 8 percent have completed, 20 percent have been dormant and 6 have quit from the study.

Table 1: Number of Master Students in OUM Seberang Jaya Who Studied for More Than 2 Years

Students Status	Number of Students	Percentage
Active	88	24
Changed program	5	1
Completed	29	8
Dormant	74	20
Graduated	149	41
Quit	24	6
Terminated	1	0
Total	370	

The purpose of this research is to explore factors affecting postgraduate students retention when enrolling via accreditation of prior experienced learning (APEL) in Open University Malaysia. This study is important as it will help OUM to sustain the master degree students till they complete their studies.

Following this introduction, the literature review is described next. The Methodology employed in this research is described in the subsequent section, while data analysis is presented in section 4. Section 5 will discuss the research findings whereas the conclusion is presented in the last section.

LITERATURE REVIEW

This section reviews literature pertaining to issues of self-motivation and academic performance.

Self-motivation

Students enter the university with different types of motivation, which is one important predictor of academic performance (Dweck, 1986; Vansteenkiste, Lens & Deci, 2006; Hulleman, Schragar, Bodmann & Harackiewicz, 2010; Kusrkar, Ten Cate, Vos CM, Westers P, Croiset, 2013). Motivation has been identified as one of the most powerful determinants of students' success or failure in school (Hidi & Harackiewicz, 2000).

Motivation is defined as one's wish and will to behave in a directed way which in turn initiates as a series of actions to choose or to engage in particular activities (Pintrich & Schunk, 1996). Motivation in the academic field refers to the reasons the student wants to attend, engage in, and put effort in learning and achieving in school (Beck, 2004). In terms of behaviour, academic motivation results in increased student involvement in activities related to learning (Connell & Welborn, 1991). Achievement need is a concern for achieving excellence through individual efforts (Murray, 1938). It is argued that the need for achievement is essential since it drives individuals to perform well or to improve their performance (McClelland, 1985). Not many researches can be found in the area of learning and school performance, as this theory is not considered suitable for school students and academic achievement. It is recommended that achievement need is yet another forceful inner motivator that students should have in order to drive them to work hard in the academic field. The most discussed theory of motivation is probably learning goals which emphasize the reasons why students learn (Smith, Duda, Allen, & Hall, 2002). Students with goals learn because they want to acquire new skills, improve their competence, increase knowledge and understanding by putting in efforts during learning. In contrast, students who adopt performance goals prefer to get favourable judgements about their competence, wanting to show that they have good ability and avoid signs of failure as well as outdo other students.

Learners require motivation and persistence to stay on their ODL success as a career building opportunity. In fact, students' motivation and persistence has been identified as important factors that could affect student completion rates. ODL students must be able to take full responsibility for their learning. They need to be more independent and be able to organise their learning within their busy life as working adults who may have families, children and chores to undertake besides the ODL program that they have registered in. A small reward could potentially lead to continuous learning and improve overall motivation. Rewarding study credits for relevant working experiences could also improve motivation. This in turn could also be made into an institutional strategy to promote lifelong learning. Such an effort could save the adult learners time, money and other resources that help them to complete their programmes.

Motivation has always been associated with academic performance in college or university. However there are numerous motivational variables in the literature it is yet to be identified as to which type of motivation affects performance best. Lack of motivation is when individuals are not motivated because they do not perceive any reward for their behaviour. Therefore, students do not feel responsible for outcomes that affect them. In this case, a student may attend college because he feels that he has no other alternative or is coerced to attend by his parents. The theory of future time reference suggested that some students see the relationship between what they do in present and what they will gain in future (Simons et.al, 2004). Therefore, hardworking students are often those who appreciate the fact that if they perform well in school, they may most probably perform better in future higher learning and career. In fact, they believe that their present success in school will better ensure their attainment of future goals and ambition. Thus, this study predicts that students who had high level of future time reference tend to perform better in their study.

Academic Performance

Academic performance is the driving factor that influences a person to attend school and obtain a degree. While there have been many theories of general motivation (Marsh, Craven, Hinkley, & Debus, 2003; Middleton & Toluk, 1999; Rotte, 1966). Many motivation theories simply make distinctions between autonomous behaviour, that which is done with a personal intention or choice, and controlled behaviour, that which is done unwillingly or out of compliance (Heider as cited by Deci, Vallerand, Pelletier, & Ryan, 1991; Sheldo & Elliot, 1998). Achievement need is a concern for achieving excellence through individual efforts (Murray, 1938). It is discussed that the need for achievement is essential since individuals to perform well or to improve their performance (McClelland, 1985). Many theories have found a strong positive correlation between need for achievement and goal attainment (Hollenbeck et al. 1989; Slocum et al, 2002). Not surprisingly, the entering characteristic which has the most influence on retention is prior academic achievement (Ishler & Upcraft, 2005). High school GPA is the most useful in predicting retention; performance on standardized tests does not add much to what can already be predicted based on high school GPA. Research has found that high school GPA accounted for 8.6 percent of the variance in student retention, and that including scores only increased the amount of variance accounted for to just over 10% (Astin, 1997). High school GPA is a better predictor of persistence compared to standardized test scores (Robbin, 2004). Academic performance in the first semester and subsequent semesters of college appear to be the best predictor of student persistence (Belcheir, 1997). After reviewing the literature on student persistence, Pascarella and Terenzini (2005) concluded that the grades earned during the first year of college may well be the single best predictor of student persistence even after taking into account students' entering characteristics. The more academically successful a student is, the more likely they will persist (Stassen, 2003). Academic performance and retention are interconnected; both are within the institutions locus of influence (Astin, 1997). In short, while the student's entering characteristics are important, institutions can influence both the academic performance and retention of their students a great deal.

The academic performance and motivation of traditional education (full-time students) and distance learning students have been examined in many studies. Regarding performance the studies reported better academic performance for non-traditional learners (Iverson, Colky, & Cyboran, 2005; Navarro & Shoemaker, 2000; Williams, 2006) but other studies have reported no significant difference in the academic performance (Haynes & Dillon, 1992; McDonnell et al., 2011; Woo & Kimmick, 2000).

METHODOLOGY

Participants and Procedure

A quantitative research design was applied in this research by distributing a structured self-administered questionnaire among 289 postgraduate students in OUM Seberang Jaya learning centre. Data was collected using purposive sampling technique whereby eligibility as participants was based on the condition that they exist and registered masters degree students in OUM Seberang Jaya who has enrolled since year 2004. Of these, 178 have completed the survey registering a response rate of 62%. This number of responses is adequate as it tops the criteria set by Hair et al. (2017).

Questionnaire Development and Instrument

The questionnaire was designed in two-sections. The first part of the questionnaire contained socio-demographic characteristics such as gender, age, types of entry qualification, years since joining the masters degree program, results obtained by semester, status of study, interest in pursuing the program, and intention to complete the program. The final part of the questionnaire contained measurement items on satisfaction for self motivation and academic performance to pursue the study.

Statistical Techniques

The data was analyzed using the descriptive statistics supported by the Statistical Package for the Social Science (SPSS) version 22 for purposes of examining the research objectives.

Data Analysis

A total of 178 respondents have given feedback on the questionnaires given to 289 Masters Degree students in OUM Seberang Jaya. From the total of 178 respondents, 41 were registered for the Masters Degree through APEL entry requirement. This means that OUM Seberang Jaya has 23 percent respondents whom studied for the Masters Degree through APEL. Even though the number of the respondents is small, but the feedback from the survey is still justified throws light on why they are retained in OUM.

Table 2: Socio-demographic Profile of Respondents

Variables		Frequency	Percentage
Gender	Male	25	61
	Female	16	39
Age	31 – 35	14	34.15
	35 – 40	10	24.39
	41 – 45	8	19.51
	46 – 50	8	19.51
	Above 60	1	2.44
Working experience	5 – 10	11	26.83
	11 – 20	20	48.78
	21 – 30	1	2.44
	31 – 40	9	21.95
Year of Study	1	9	21.95
	2	22	53.66
	3	6	14.63
	4	3	7.32
	5	1	2.44
GPA Result	3.67 – 4.00	15	36.59
	3.00 – 3.66	22	53.66
	2.67 – 2.99	3	7.32
	Below 2.00	1	2.44
Intend to complete the Master Degree	Strongly Agree	11	26.83
	Agree	22	53.66
	Normal	7	17.07
	Disagree	1	2.44
	Strongly Disagree	0	0.00

Academic results motivate me	Strongly Agree	14	34.15
	Agree	18	43.90
	Normal	6	14.63
	Disagree	3	7.32
	Strongly Disagree	0	0.00
Tutor guide and given support	Strongly Agree	10	24.39
	Agree	20	48.78
	Normal	9	21.95
	Disagree	2	4.88
	Strongly Disagree	0	0.00
I am happy with my studies	Strongly Agree	19	46.34
	Agree	13	31.71
	Normal	9	21.95
	Disagree	0	0.00
	Strongly Disagree	0	0.00
Having Masters Degree could mean better pay	Strongly Agree	10	24.39
	Agree	8	19.51
	Normal	16	39.02
	Disagree	5	12.2
	Strongly Disagree	2	4.88
Taking Masters Degree for self satisfaction	Strongly Agree	14	34.15
	Agree	21	51.22
	Normal	6	14.63
	Disagree	0	0.00
	Strongly Disagree	0	0.00
Taking Masters Degree for employment	Strongly Agree	3	7.32
	Agree	10	24.39
	Normal	10	24.39
	Disagree	12	29.27
	Strongly Disagree	6	14.63
Taking Masters Degree for family satisfaction	Strongly Agree	6	14.63
	Agree	14	34.15
	Normal	12	29.27
	Disagree	6	14.63
	Strongly Disagree	3	7.32
I am prepared for Masters Degree Program	Strongly Agree	14	34.15
	Agree	23	56.10
	Normal	4	9.76
	Disagree	0	0.00
	Strongly Disagree	0	0.00

I actively participate in classroom discussions	Strongly Agree	11	26.83
	Agree	23	56.10
	Normal	7	17.07
	Disagree	0	0.00
	Strongly Disagree	0	0.00
I want to have good grade	Strongly Agree	24	58.54
	Agree	14	34.15
	Normal	3	7.32
	Disagree	0	0.00
	Strongly Disagree	0	0.00
I exert efforts in doing assignments	Strongly Agree	18	43.90
	Agree	16	39.02
	Normal	7	17.07
	Disagree	0	0.00
	Strongly Disagree	0	0.00
I prepare for examinations	Strongly Agree	19	46.34
	Agree	18	43.90
	Normal	4	9.76
	Disagree	0	0.00
	Strongly Disagree	0	0.00
I study harder to improve my grade	Strongly Agree	21	51.22
	Agree	17	41.46
	Normal	3	7.32
	Disagree	0	0.00
	Strongly Disagree	0	0.00

Table 3 displays the descriptive data of the demographic profile of the respondents of whom 61 percent were male and 39 percent were female. A large number of students came from the age group of 31 – 35 years old comprising 34.15 percent, 24.39 percent from group 35 – 40 years old and 19.51 were from age 41 – 45 years old and 46 – 50 years old respectively. 26.83 percent of the respondents have worked between 5 to 10 years, 48.78 percent 11 – 20 years 2.44 worked between 21 – 30 years and 21.95 percent worked between 31 – 40 years. 75.61 percent of the respondents studied within two years and balance 24.39 percent have studied between 3 to 5 years. Most of the respondents' results are between grade point average (GPA) 3.00 to 4.00 which comprise 90.25 percent. Only 9.76 percent were below 3.00 GPA.

Reason for Taking the Program

Figure 1 displays the respondents who strongly agree and agree on the variables surveyed. 80 percent of the respondents were taking the Masters Degree for their self-satisfaction, 31.71 percent for their employment and 48.78 percent for family satisfaction. From this survey, it shows that self satisfaction for taking the programs is the top reason. 78 percent of the respondents were happy with their Masters Degree studies. 43.9 percent only agree that having a Masters Degree leads to better pay, 39.02 percent have responded as neutral and 17.08 percent has disagreed and strongly disagreed.

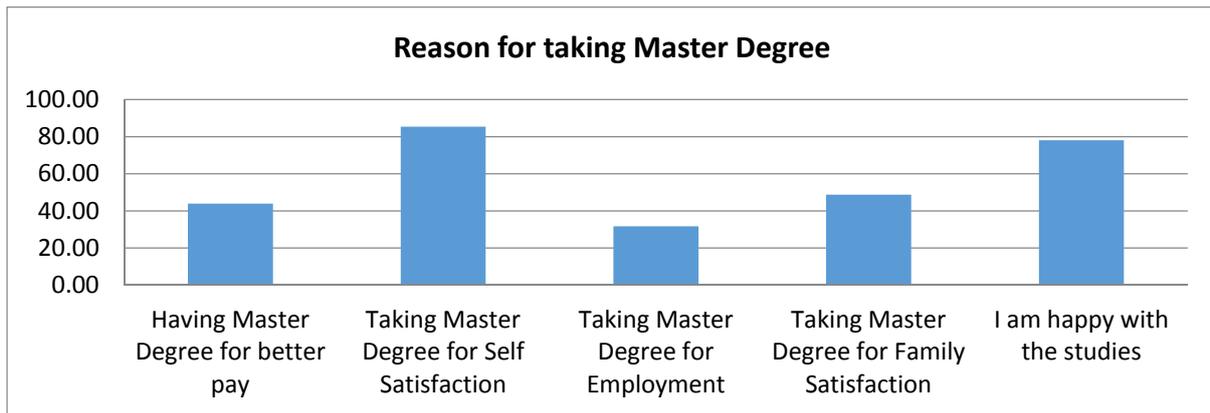


Figure 1: Reasons for Taking the Program

Reasons for Staying with the University

Figure 2 shows that 90.24 % of the respondents have obtained GPA result within range of 3.00 to 4.00. 80.49 percent have indicated that they would like to complete their study for the Masters Degree program. 78.05 percent have indicated that academic results motivate them to study the program. 73.17 % are satisfied with the tutor guide and support given to them. 90.24 percent are prepared for their Masters Degree program. This means that most of the students with APEL entry levels were satisfied with their Masters Degree program and they will sustain until they complete their study.

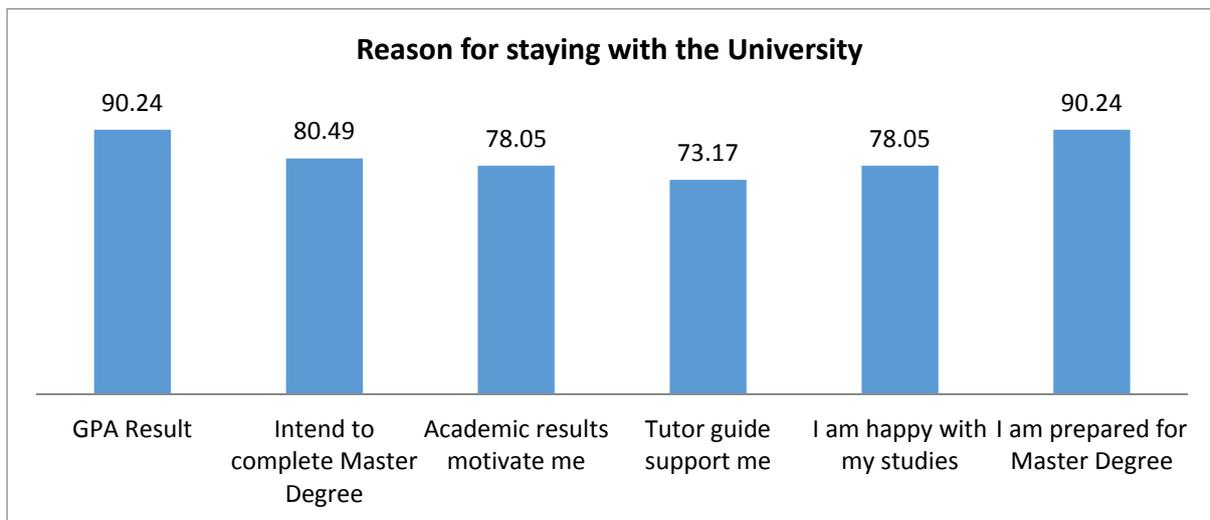


Figure 2: Reasons for Staying with the University

Self-motivation

Figure 3 displays that 82.3 percent participated in the classroom, 92.68 percent said that they want to have good grade. 82.93 % have confirmed that they exert effort to do assignments while 90.24 % gave feedback that they always prepare themselves for examinations and 92.68 confirmed that they study hard to improve their grade.

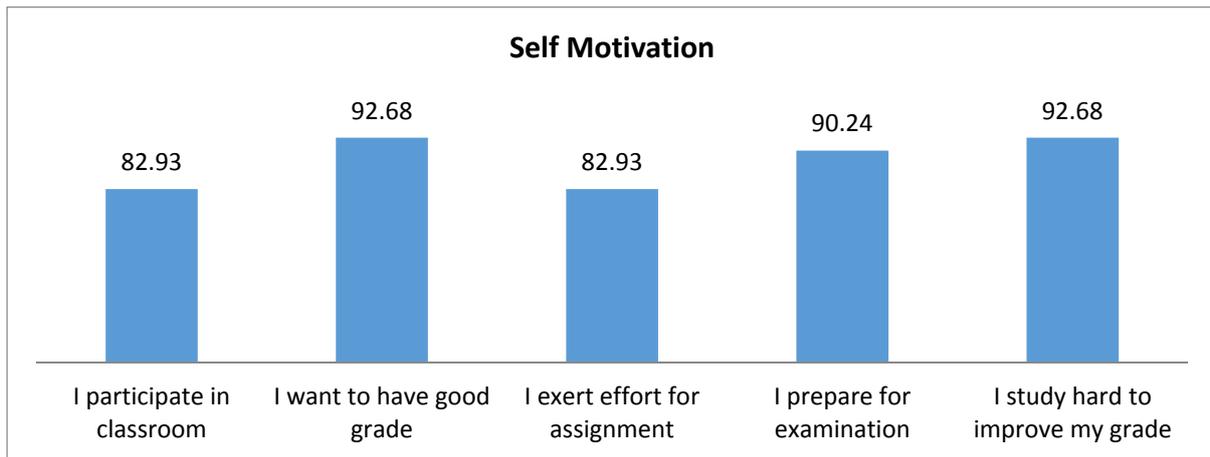


Figure 3: Self-motivation

DISCUSSION

This study explored factors affecting postgraduate students’ retention when enrolling via APEL in Open University Malaysia. This descriptive research found that most of masters degree students pursued their studies due to self-motivation and academic performance. Satisfaction with the program, tutors and academic results are other strong factors for their retention in the university. There were 26.83 percent who strongly agreed and 53.66 percent who agreed to complete their Masters Degree with OUM, while 46.34 percent strongly agreed and 31.71 percent agree that they are happy with their studies in OUM. This finding implies that the university needs to ensure that the students’ are happy studying with the university so that the students will sustain until they complete their studies. Additionally, satisfaction with tutors’ guides and given support contributed 24.39 % who strongly agreed while 48.78% agreed. But 14.63 percent have given normal rating and 4.87 percent disagreed, this is an area into which the university should look into and seek to improve. A closer examination discovered that masters degree students have given most feedback as being satisfied with the quality of institutional support such as academic result, tutor guide and support, happiness with the university and active participation in the classroom. The feedback indicated that more than 70 percent were satisfied that these factors did contribute to student retention in the university.

CONCLUSION AND RECOMMENDATIONS

Self-motivation to accomplish was the only motivation type that appeared to have made a unique and formidable contribution to academic performance. Therefore it is reasonable to conclude that self-motivation predicts students’ ability to adapt to the intellectual demands of a college. Retention and degree completion at the Masters Degree level are continuous challenges for programs and university stakeholders.

Past research has indicated different types of motivation that have been shown to strongly associate with performance. This is also concurrent with the assertion of some researchers that motivation cannot be explained by only one theory since people are surely driven by different types of motivation at different levels. Research has suggested that motivation does not act individually but may be interrelated, thus contributing to a wholesome effect on the motivation of students to achieve academically (Dowson & Meinerney, 2001). In response to this issue, this study has underscored that issues of students’ masters degree retention rate are mostly influenced by motivational factors. The results of this study are aimed at numerous stakeholders, policy makers, higher education administrators; post graduate staff, faculty and students who are pursuing their masters degrees. The predictive power of student’s motivation may assist

masters degree programs in developing strategies to enhance masters degree motivation towards ensuring that students persevere and complete the degree.

However, like other research, this study has some limitations. First limitation is that the research was conducted at single learning centre only, which may limit the applicability of the findings to other learning centre populations. The master's degree examined was one based on the experiences of students within OUM. Since this study was conducted with current students of the program, one possible limitation is that the accuracy of information from the students depends on their experience while in the program. However, there are fundamental similarities across master's degree programs of various disciplines.

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IMPACT OF OPEN DISTANCE LEARNING PROFESSIONALISM & EMPOWERMENT COURSES ON CLINICAL NURSE PRACTICE

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ABSTRACT

Clinical nurse professionalism includes empowerment which is associated with increased nurse satisfaction and improved patient outcomes, both being elements of a healthy work environment. This study aims to compare the academic results of learners in open distance learning (ODL) professionalism course with the purported display of professional behaviour in clinical practice. In addition to demographic data, the survey included in quantifying information on nurses discerning qualities in displaying professionalism and empowerment in their daily nursing practice from their superiors and compared with the learner's academic results upon completion of the course. Data analysis using descriptive statistics involving 73 respondents (63%) from nurse supervisors who rated their nurses. Nurses moral principle is rated highest on acting honestly (65.8%), followed by acting justly (58.9%). On personal integrity, nurses can look after their own wellbeing (56.2%) and act under pressure (58.9%). Their expertise skills showed ability in working and acting independently and being autonomous (50.7%). Their power of making decisions is 52.1% in the clinical area. Nurses who are future-oriented can promote new ideas at the workplace (52.1%), and their sociability level is 50.7% in solving problems responsibly. The above professionalism and empowerment qualities showed a positive trend and relevancy with their academic performance. In conclusion, this study professed to show academic performance of nurses from the course is internalised and visible in their professional behaviour in the clinical area.

Keywords: *Open and Distance Learning, Online, Nurses, Professionalism, Empowerment*

INTRODUCTION

Nurses represent the most significant number of professionals in the health care environment. Today's profession of nursing is evolving as a valuable public service. In Malaysia experience, the nursing profession is undergoing a gradual progression toward professionalism where positive aspects of nursing professionalism must be recognised and implemented in the clinical practice.

Professionalism and Issues in Nursing is one of the coursework for students pursuing the baccalaureate in nursing at OUM distance learning (hereafter DL) programme. The course offers the foundation to professional nursing, understand current issues relating to the profession and a platform to discuss challenges and barriers to attaining professional status. Besides clinical skills, nurses need a strong sense of professional values and identity. The module includes focusing on the concept of empowerment as empowerment is vital to ensure nurses can work effectively. Its focuses on what empowerment is and the relationship between power and empowerment, the need for empowerment in nursing, and qualities of an empowered nurse. The five qualities of an empowered nurse (QEN) by Kuokkanen et al., (2016) related to moral principles, personal integrity, expertise, future – orientedness and sociability which encompass the issues on nursing profession related to the enhancement of nursing image and empowerment that is aligned with the Nursing Practice Act and regulation in Malaysia.

This study purportedly show from the academic results obtained from this course is internalised in their professional behaviour at the clinical practice. The elements of professionalism are enunciated in the learning outcomes of the course, comprehended and articulated by the nurses in their areas that influence their nursing practice. Balang & Burton (2014) carried out a qualitative study and concluded that this would be assimilated and gesticulated into a very positive habitual and rituals among nurses and surely to be illuminating into their practice, and hence positive patient outcomes and good philanthropic nursing care are seen. From the viewpoint of an individual nurse, the empowerment process consists of both critical introspection and outside guidance leading to an appropriate modifying action (Balang & Burton, 2014; Kuokkanen et al., 2016). The nursing practice environment is often very involved with demands on high-level competence and capability to collaborate as a member of the care team.

Professionalism is one of the essential topics in nursing communities globally, and the last half-century has become an unflinching issue of much concern within the nursing fraternity [Anderson & Mangino, (2006); Gugerty et al., (2007); Girard et al., (2005)]. Since 2009, Birks, Francis, Chapman, Mills, & Porter have argued that nursing in Malaysia still has a long way to go in terms of its nurses' professionalism. However, there are efforts and positive evidence that this profession in Malaysia is slowly moving forward (Birks, Francis, & Chapman, 2009). One of these positive indicators is these nurses are presently accepted and in demand globally as substantial numbers of them are working abroad and the number is increasing yearly.

In this study, the approach to teaching and learning of these professional values through open distance learning is very much a challenging one. Not only are they often studying part-time with all the pressures of family responsibilities or work, but also, distance education students often had to overcome negative perceptions about the overall quality of the programmes taken and qualifications (Gaskell & Mills, 2014). Concerns about the quality of distance education and the knowledge, abilities and skills of successful students have been expressed internationally. This is undoubtedly related to the local context and expectations of study at a campus-based university, but is relevant to the perceived quality of distance education and, hence, the possible outcomes and perceived employability of those who have studied through this mode (Jung, Wong, & Belawati, 2013).

LITERATURE REVIEW

Professionalism is one of the fundamental concepts of nursing (Karadağ, Hisar, & Elbaş, (2007); Wynd, (2003). Balang, Burton, & Barlow (2017) reported from previous studies, although professionalism in nursing's original context is relatively straightforward to define, it is neither simple nor easy to describe or recognise in absolute terms, whether the behaviour is professional or unprofessional. Also, professionalism in nursing is equally an essential component of competency that enables nurses to work safely and efficiently.

Initial concepts into defining professionalism vary, the earliest theories being are the Miller's Model, entitled "Wheel of Professionalism in Nursing" from 1984 (Wynd, 2003). The contemporary conceptualisation of professionalism described as an extent to which an individual identifies with a profession and adhere to its standard and way of relational caring practice caters on the physical and psychological needs of health care consumer (Zakari, Al Khamis, & Hamadi, 2010). Creating a culture of excellence requires making explicit a set of values and performance expectations to which all nurses can subscribe, and that influences practice behaviours (Girard et al., 2005). Further described by (Girard et al., 2005) that professionalism in nursing is a commitment to behaviours of compassion, caring and strong ethical values; continuous development of self and others; accountability and responsibility for insightful practice and demonstrating a spirit of collaboration and flexibility as cited in Balang & Burton, (2014).

The concrete association between professionalism and empowerment create the authentication of the attributes of professionalism into nursing practice and significantly contribute positive health outcomes and patient satisfaction. Empowerment is an abstract and dynamic concept, which is not feasible to confine exactly in space or time. It has been described both as a state and a process. The previous study by Kuokkanen et al., (2016) described empowerment and competence of fresh graduates fairly high indicating competence had the most substantial effect on newly graduated nurses' empowerment. Empowerment has been discussed from three aspects using critical social, organisational and psychological theories, On the one hand, empowerment being portrayed as an essential part of human nature and development, and on the other hand, it has been described as an aspect to organisational effectiveness and quality. The psychological empowerment based on personal development examines empowerment from the viewpoint of individuals (Kuokkanen & Leino-Kilpi, 2000).

Much existing research recognised education as a crucial element in professional identity development for nurses. Post-registration degree courses are an essential means by which registered nurses can access tertiary education in order to further develop as professionals (Numminen et al., 2014). Empowerment has been described as both a process and an outcome (McCarthy & Freeman, 2008). Hawks, (1992 p.610) defined empowerment as "the interpersonal process of providing the resource, tools, and environment to develop, build, and increase ability and effectiveness of others to set and reach goals for individual and social ends". This definition aligns with Kanter's theory of structural empowerment, which relates to the increased level of organisational commitment, autonomy, and self-efficacy for learning to accomplish personal and professional goals (Faulkner & Laschinger, 2008). The central idea is related to the acquisition of power by individuals to effectively accomplish their work. Studies have demonstrated that empowered clinical nurses have a more positive attitude towards their work, achieve job satisfaction, and experience less stress than others. Meanwhile, from the aspect of education, it is seen that nursing programmes enhancing empowerment may affect psychological empowerment, competence and job productivity (Kuokkanen & Leino-Kilpi, 2000).

Another aspect of professionalism being recognised is collaboration. In the clinical setting, collaboration and teamwork is a critical factor and a critical strategy that helps maintain a safe and effective clinical environment (Miller, Adams, & Beck, 1993; Zamanzadeh, Irajpour, Valizadeh, & Shohani, 2014). In the qualitative study, it was found that the participants considered collaboration as an important and influential potential in their work, with subsequent positive outcomes such as

providing safe care, with reduced error and mutual satisfaction of the personnel and patients (Zamanzadeh et al., 2014).

The findings from Birks, Francis, & Chapman, (2009) stated changes occurred overtly through the study of therapeutic and professional communication subjects and obliquely through the development of collateral knowledge, cognitive skills and attitudes that accompanied the learning experience of nurses who underwent a professional process transition. Becoming professional impacted on and responded to changes that occurred for the individual personally and as a nurse. A self-reported study indicated 'moral principles' reflects human values in nursing and from the viewpoint of an individual nurse, the empowerment process consists of both critical introspection and outside guidance leading to an appropriate modifying action.

The Baccalaureate in nursing program at OUM by distance learning programme is designed to meet the professional development needs of nurses, first-line nurse managers, and nurse supervisors. Based on principles of open learning it is, as a distance learning programme, unique in a field where face-to-face teaching and learning are the norms for developing the skills, values and knowledge for professional practice. Open and distance learning gives learners increased autonomy, choice and control, and introduce components of flexibility into the learning process in that students can choose, what, where, when and how they learn as cited by Gaskell & Mills, (2014).

FINDINGS AND DISCUSSION

Findings

A descriptive cross-sectional design was applied. In this study, empowerment was measured using the 17-item qualities of an empowered nurse (QEN) scale (Kuokkanen & Leino-Kilpi, 2000) based on the five categories representing moral principles, personal integrity, expertise, future orientedness, and sociability. These five categories were adopted as the conceptual framework for the questionnaire used in this study.

Table 1 provided that the total number of respondents is $n = 63\%$ (73/116). Some of the sample characteristics are remarkable as these demographic profiles of nurses studying at OUM can influence the findings of this study. The average age of nurses involved in this study is between 31–40 years old 54.8% (40/73). Below 30 years of age is 19.2% (14/73); above 40 years old is 24.7% (14/73). This indicates that the majority of practising nurses are in their prime years. The response rates are staff nurses 62% (44/71), and the senior management group as head nurse or nurse managers consist of 38% (27/71). Majority of them are above five years working experiences 91.8% (67/73). 59.7% (43/72) are working in public hospitals, 27.8% (20/72) are from private hospitals, and 15.3% (11/72) in community health clinics. The disciplines involved are medical 9.6% (7/73); surgical 16.4% (12/73); community health clinics 15.1% (11/73) and specialised units form the majority 65% (48/73). This indicates that the majority of practising nurses have different specialised nursing qualifications.

Nurses' moral principle is rated highest on acting honestly (65.8%), followed by acting justly (58.9%). On personal integrity, nurses can look after their own wellbeing (56.2%) and act under pressure (58.9%). Their expertise skills showed ability in working and acting independently and being autonomous (50.7%). Their power of making decisions is 52.1% in the clinical area. Nurses who are future-orientedness can promote new ideas at the workplace (52.1%), and their sociability level is 50.7% in solving problems responsibly.

Table 1: Qualities of an Empowered Nurse (QEN) (n = 73, Range 1–5; 1 = Strongly Disagree, 5 = Strongly Agree)

Variables		Total N = 73 N (%)
Moral Principles Treat others with respect	Strongly Disagree	2(2.7)
	Neutral	3(4.1)
	Agree	20(27.4)
	Strongly Agree	48(65.8)
Acts honestly	Strongly Disagree	2(2.7)
	Disagree	1(1.4)
	Neutral	4(5.5)
	Agree	23(31.5)
	Strongly Agree	43(58.9)
Acts justly	Strongly Disagree	3(4.1)
	Disagree	4(5.5)
	Neutral	5(6.8)
	Agree	33(45.2)
	Strongly Agree	28(38.4)
Personal Integrity Look after own well being	Strongly Disagree	1(1.4)
	Disagree	2(2.7)
	Neutral	8(11)
	Agree	41(56.2)
	Strongly Agree	21(28.8)
Dares to say and act, been assertive and courages	Strongly Disagree	2(2.7)
	Disagree	1(1.4)
	Neutral	8(11)
	Agree	42(57.5)
	Strongly Agree	19(26)
Able to act under pressure	Strongly Disagree	2(2.7)
	Disagree	2(2.7)
	Neutral	7(9.6)
	Agree	43(58.9)
	Strongly Disagree	19(26)
Broad minded and flexible	Strongly Disagree	2(2.8)
	Neutral	6(8.3)
	Agree	33(45.8)
	Strongly Agree	31(43.1)

Expertise Acts skilfully and are competent	Strongly Disagree Disagree Neutral Agree Strongly Agree	2(2.7) 1(1.4) 5(6.8) 32(43.8) 33(45.2)
Has personal power to make decision	Strongly Disagree Disagree Neutral Agree Strongly Agree	1(1.4) 2(2.7) 9(12.3) 38(52.1) 23(31.5)
Acts independently and autonomous	Strongly Disagree Disagree Neutral Agree Strongly Agree	1(1.4) 2(2.7) 12(16.4) 37(50.7) 21(28.8)
Responsible to consult and teach colleagues	Strongly Disagree Neutral Agree Strongly Agree	2(2.7) 6(8.2) 35(47.9) 30(41.1)
Future-orientedness Innovative, creative in finding a solution	Strongly Disagree Disagree Neutral Agree Strongly Agree	2(2.7) 1(1.4) 8(11) 39(53.4) 23(31.5)
Promote new ideas and enthusiastically at work place	Strongly Disagree Disagree Neutral Agree Strongly Agree	1(1.4) 2(2.7) 10(13.7) 38(52.1) 22(30.1)
Forward thinking, plan ahead, assess effects before acting	Strongly Disagree Disagree Neutral Agree Strongly Agree	2(2.7) 1(1.4) 8(11) 36(49.3) 26(35.6)
Sociability Open-minded and discuss openly	Strongly Disagree Disagree Neutral Agree Strongly Agree	2(2.7) 2(2.7) 6(8.2) 32(43.8) 31(42.5)

Respected by others as she/he work for common goal	Strongly Disagree	1(1.4)
	Disagree	3(4.1)
	Neutral	6(8.2)
	Agree	29(39.7)
	Strongly Agree	34(46.6)
Socially responsible to solve problems	Strongly Disagree	2(2.7)
	Disagree	2(2.7)
	Neutral	4(5.5)
	Agree	37(50.7)
	Strongly Agree	28(38.4)

Table 2 showed the overall academic results with 166 students taking the course work and final exam. The mean score for course work achieved was 35.74 while final exam 26.49. The overall mean score achieved was 61.88 by the majority of students.

Table 2: Course: NBBS1204 Professionalism and Issues in Nursing Results

	Overall	Course Work	Final Exam
Std Dev	10.65	8.38	5.5
Mod	70.13	40.25	28.75
Median	63.69	38.88	26.25
Mean	61.88	35.74	26.49
Incomplete	2	4	3

Figure 1 illustrated an overall grade of students undertaking the course n = 116. Majority of students (32/116) are awarded scoring marks between 60–64 (B-); 25 out of 116 achieved marks between 65–69 (B); 17 out of 116 achieved marks between 70–74 (B+). 11 out of 116 students achieved marks between 55–59 (C+); 10 students achieved 50–54 (C); 7 out of 116 students achieved 75–79 (A-); 6 out of 116 students achieved marks between 45–49 (C-); 2 out of 116 achieved 40–44 (D+); only 1 student achieved marks of 80–100 (A), and there were 5 failures with scoring between 0–34 (F).

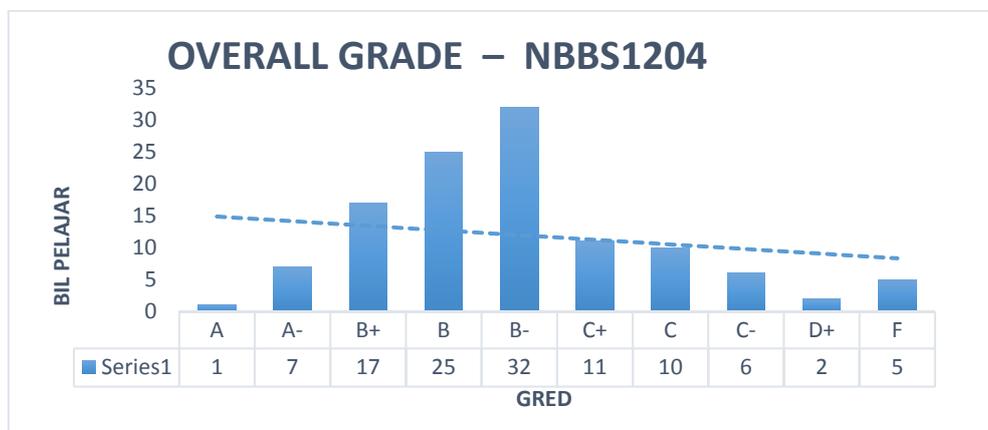


Figure 1: Overall Marks

Discussion

Knowledge of Professionalism and Empowerment

Nurses with varying levels of practice experience from various clinical settings completed the course via ODL, and academic results showed in Table 2 and Figure 1 explained students' detailed performance which indicates that 95.6% have successfully passed the course. This determines their cognitive level of professionalism and empowerment in nursing. It is encouraging to compare this figure with that indicated by Numminen et al., (2014) that tertiary post-registration education is a crucial element in professional identity development for nurses. These results agree with the findings of the previous study by Birks, Francis, & Chapman, (2009) which stated, changes occurred overtly and obliquely through the development of collateral knowledge, cognitive skills and attitudes that accompanied the learning experience of nurses who underwent a process professional transition. Nurses were becoming professional impacted on and responded to changes that occurred within the individual personally and as a nurse.

Efficiency in Professionalism and Empowerment

The evaluation on the level of efficiency in professionalism and empowerment upon completion of the module in the BNS program is shown in Table 1. The five categories of QEN are moral principles, personal integrity, expertise, future – orientedness and sociability. Moral principle is rated highest on acting honestly (65.8%), and the other four categories which were rated above 50% include looking after their wellbeing and acting under pressure. In expertise skills, nurses have the ability to working and acting independently and are autonomous with power in making decisions in the clinical area. Nurses who are future-orientedness can promote new ideas at the workplace, and they are solving problems responsibly. The findings observed in this study mirror those of the previous studies that have examined the effect of creating a culture of excellence with an explicit set of values and performance expectations to which all nurses can subscribe, and influences practice behaviours. This set of explicit values of professionalism in nursing is a commitment to behaviours of compassion, caring and strong ethical values; continuous development of self and others as asserted by (Girard et al., 2005). This finding is consistent with Balang & Burton, (2014) who viewed accountability and responsibility for insightful practice will demonstrate collaboration and flexibility.

The Internalisation of Professionalism and Empowerment

It is apparent that a clear trend is observed between academic performance (Figure 1) that transcends to the qualities of professional behaviour and empowerment (Table 1) among students on completion of the course. Many nurses enter the course had many years of experience in nursing practice and the age group, length of service, and years of experience is related to professionalism (Yoder, 1997) which this study concurs although the significance of the relationship is not being tested in this study. This finding corroborates with the ideas of Kuokkanen & Leino-Kilpi, (2000) who suggested that cognitive outcomes on completion of the course influence their professional behaviour through adopting belief system and philosophy of professionalism and empowerment within the reality of practice setting. This characterised insightful practice, affect competency, job productivity and satisfaction through positive attitude towards their profession.

CONCLUSION

This preliminary descriptive cross-sectional study was applied to measure five qualities of empowerment among nurses who had taken a professionalism course. Preliminary data has limited the inferential analysis of this study. The five empowerment qualities provide a real association between cognitive performances of nurses in academia. In conclusion, this study professed to show academic performance of nurses from the course is internalised and visible in their professional behaviour in the clinical area.

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KEY DETERMINANTS OF ACADEMIC EMPLOYEES' PERFORMANCE IN MALAYSIAN ONLINE DISTANCE LEARNING INSTITUTIONS

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ABSTRACT

The objective of this study is to evaluate direct effect of leadership style, employee commitment, organisational culture, self-efficacy and employee performance relationship in Malaysian online distance learning higher institutions (ODL). To analyse the casual relationships among leadership style, employee commitment, organisational culture, self-efficacy and employee performance, the Structural Equation Model (SEM) was adopted. The model was designed and later analysed by using the Partial Least Square (PLS) procedure on data collected from a survey that yielded 206 usable questionnaires. The results showed that leadership style, organisation culture and self-efficacy has a positive and significant influence on academic employees' performance in Malaysian ODL higher institutions. However, employee commitment did not show significant influence on academic employees' performance. It is vital to do the research utilising experimental design by using longitudinal data in Malaysian ODL higher institutions via vigorous measures. The findings suggest that ODL institutions should give greater emphasis on strengthening strong and positive leadership style, organisation culture and self-efficacy in ensuring strong performance of their academic employees.

Keywords: *Leadership Style, Employee Commitment, Organizational Culture, Self-efficacy, Employee Performance, Online Distance Learning*

INTRODUCTION

Human capital in any organisation plays a very vital role in ensuring that the organisation achieves its organisational goals. Employees of each organisation play an important role to realise its goals. To achieve the organisation task is the responsibility of its human capital and such human capital performance will reflect on the organisation performance. The same is also true in higher education institutions. Tertiary education sector in Malaysia is growing rapidly with the number of colleges and universities also keep increasing. The success of higher education greatly lies on the performance of the academics in delivering their duty. Students' achievement in academic depends largely on the performance of academic staff. In any education system in any country around the world, academic employees play a very important role since the success of any educational organisation rely on their most vital asset, academic employees, and in view of that academic employees' performance is the most concern among all educational institutions (Khan et.al., 2012). In the past decade, most of the research focused on the academicians' performance in conventional higher education institutions or conventional universities. It remains unclear the exact reason as to why the performance of online distance learning academicians is questionable since not many studies have been done on the subject. Therefore, the purpose of this study is to evaluate the factors that influence the performance of academicians in online distance learning institutions in Malaysia.

LITERATURE REVIEW

According to Wall, Michie, Patterson, Wood, Sheehan & Clegg (2004), employee performance is one of the major factors when evaluating organizational performance. Munchinsky (2003) revealed that employee performance is a result of action that can be determined, studied and evaluated from achievement dimension at the individual employee level. Therefore, because of its significance, various studies have been conducted to examine and find ways to strengthen employee performance. Byars & Rue (2000), Kahya (2009) and Thamrin (2012) argued that employee performance is the result of organization rules and regulations, anticipations, or obligations for authorized role. Most of the studies concentrate on the leadership style and the job performance of employees (Raja & Palanichamy, 2011). Concept of leadership can be viewed extensively in both individual and organization. According to Bethel (1990), leadership has a powerful capability to influence employees. Also, Bohn and Grafton (2002) gave the definition of leadership as it creates fresh vision; enhance the employees' self-confidence via communication and coordination. Leadership is merely how the leader influences the followers to do their utmost effort voluntarily in achieving the organization goals (Igbaekemen, 2014). According to Alghazo & Al-Anazi, (2016), Leadership plays a vital role in making an energetic environment in any organization. Hurduzue (2015) suggested that the successful of the members' development in organizations can be achieved via right and effective leadership style. Employee commitment can be gauged on the achieving of goals by the employees, by looking how committed the employees are to their organization's goals mission and objectives (Bansal, Mendelson, & Sharma, 2001).

However, Darwish (2017) had an different view by looking that commitment is measured by considering the ability of employees to accept changes that take place in the organization. Herold et al (2008) in same opinion as Darwish (2017), they also pointed out that organizational commitment is the employees' attitude following the changes that happen in the organization, to be precise, they mean acceptance level of the change and whether the the changes that take place in organization is openly accepted by the employees. Organizational culture is one of the factors that can affect employee performance in the organization. In the study conducted by Mohammad, Rumana & Saad (2013) on telecommunication industry in Bangladesh, they have found that organization culture has a positive and significant influence on employee's performance. Stephen & Stephen (2016) when studied on the academic staff in Niger Delta University, Nigeria, have found that organizational culture plays a very important role and has a positive and significant impact on employee performance. Self-efficacy is a essential principle of Albert Bandura's (1977) social cognitive theory. Self-efficacy is defined as the

belief, or confidence, that one can successfully implement a required behavior so that it can have an outcome such that the higher the level of self-efficacy will lead to the higher individual belief that he or she can execute the needed behavior to acquire a particular result (Bandura, 1977). Lunenburg (2011) suggested that self-efficacy influences how the employees choose the task and set the goals for themselves. Their effort the tasks employees choose to learn and the goals they set for themselves. Their effort and determination to deal with difficult task will also influenced by self-efficacy.

Based on the above conceptual development, the following hypotheses have been proposed:

1. There is a relationship between employee commitment and employee performance in online distance learning institutions in Malaysia.
2. There is a relationship between leadership style and employee performance in online distance learning institutions in Malaysia.
3. There is a relationship between organization culture and employee performance in online distance learning institutions in Malaysia.
4. There is a relationship between self-efficacy and employee performance in online distance learning institutions in Malaysia.

METHODOLOGY

For this study, survey instrument, questionnaires were utilized based on the comprehensively evaluation of literatures to come out with the right scales that been used in the previous studies with strong validity and reliability. There are 35 observed variables consist of leadership style 7 items, organization commitment 7 items, self-efficacy 7 items, organization culture 7 items, and employee performance 7 items. To measure each of the items, five-point Likert Scale was used from 1-strongly disagree to 5-strongly agree. The main respondents for this study are academic employees from local online distance learning institutions. From 290 questionnaire distributed, 217 were returned. This made up 75% response rate and it is adequate to do data analysis using SEM analysis. Out of 217 returned questionnaire, 212 were completed and after screening and deletion of outliers, 206 questionnaires were ready to be used for analysis.

Data Analysis

Model Measurement

In this study, partial least squares (PLS), SmartPLS to be precise, were utilized to assess the sufficiency of model measurement and the predictive relevance of inner model, and eventually test the four hypotheses. PLS focuses on the variance explanation using ordinal least squares, a technique suitable for link as mentioned in this study (Gudergan et al., 2008). The adequacy and the significance of reflective outer measurement models for the other constructs were gauged through a range of indices test including of individual indicator weights and loadings, composite reliability, average variance explained (AVE), bootstrap t-statistic (critical ratio), discriminant validity and convergent validity. In addition to that, the calculation of bootstrapped critical ratio of t-values was done to determine the significance of reflective outer measurement model.

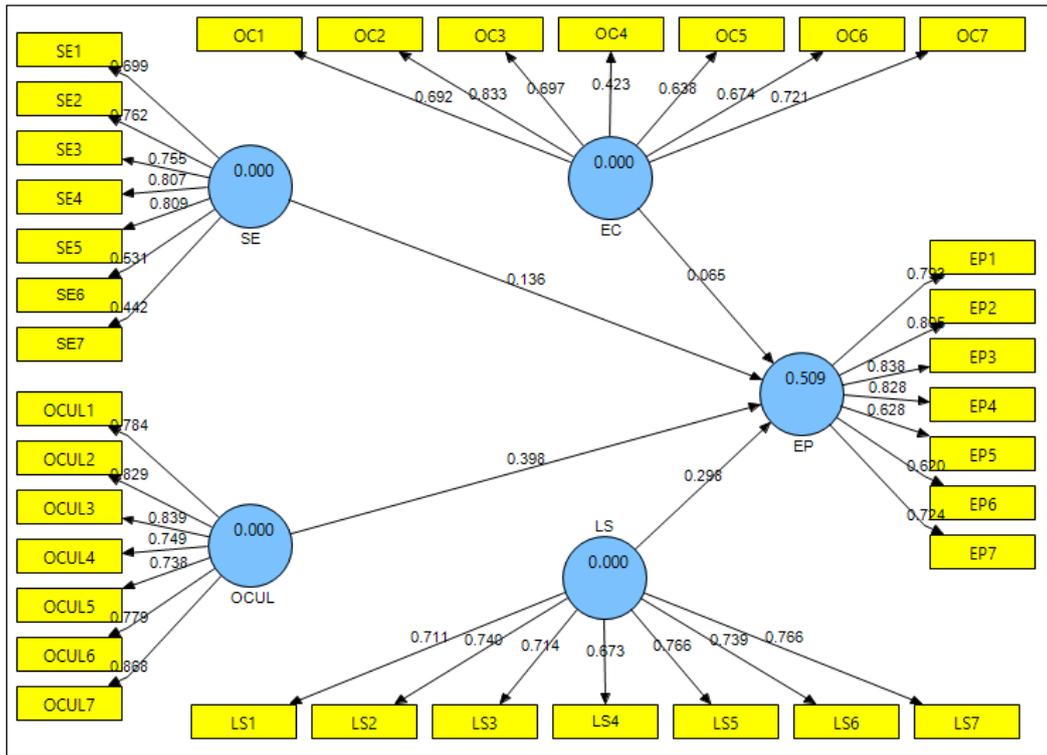


Figure 1: Specified Model

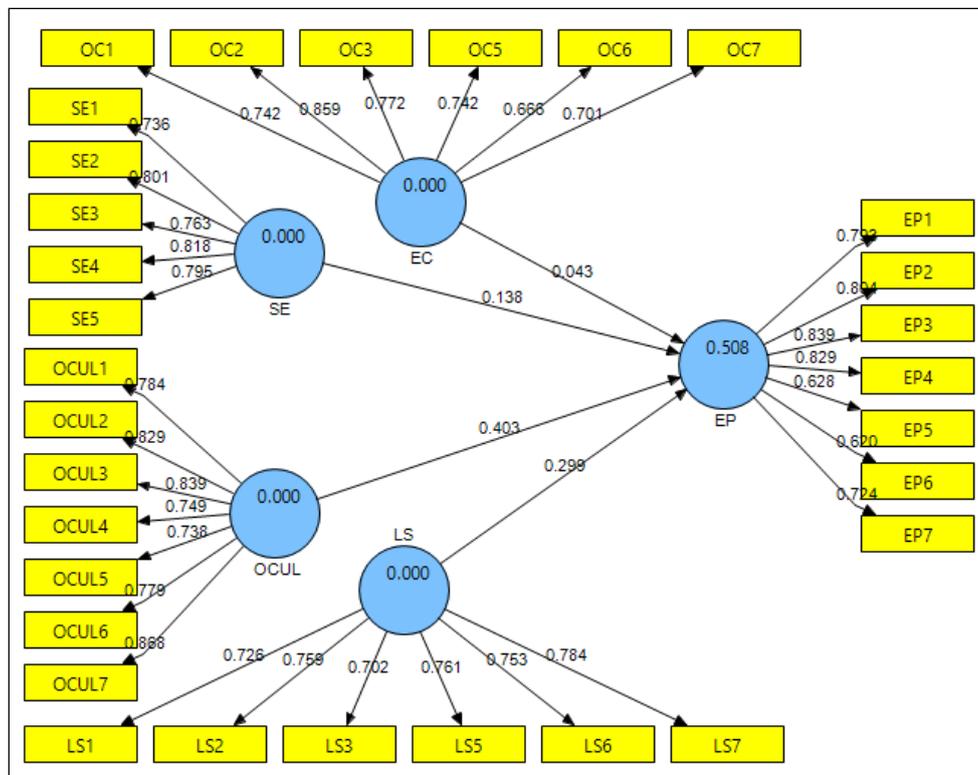


Figure 2: Re-Specified Model & Path Coefficient

Convergent Validity

The convergent validity of the adequacy of outer-measurement models was estimated by computing composite reliability (Hulland, 1999). The analysis for convergent validity results confirmed that the outer measurement models and their first-order factors in line with Nunnally's (1978) reliability criteria, 0.70. As shown in Table 1, the composite reliabilities of all constructs composite reliabilities and their first-order factors range from 0.884 to 0.925. Hence, the constructs connected with outer measurement models revealed adequate convergent validity.

Table 1: Construct Validity & Reliability and Outer Measurement Model

Content Performance	AVE	Composite Reliability	Loading	T-Value
Employee Commitment	0.562	0.884		
EC1			0.742	3.9015
EC2			0.859	5.928
EC3			0.773	4.4174
EC5			0.742	3.8589
EC6			0.666	4.694
EC7			0.701	4.5062
Self-Efficacy	0.613	0.888		
SE1			0.736	19.6253
SE2			0.801	33.7356
SE3			0.763	33.0949
SE4			0.818	49.0398
SE5			0.795	38.4388
Organization Culture	0.639	0.925		
OC1			0.784	40.074
OC2			0.829	50.7029
OC3			0.839	48.8571
OC4			0.749	33.6629
OC5			0.738	28.5057
OC6			0.779	36.5963
OC7			0.868	66.2624
Leadership Style	0.560	0.884		
LS1			0.726	28.1671
LS2			0.759	35.2605
LS3			0.702	24.3038
LS5			0.761	29.0501
LS6			0.753	35.1217
LS7			0.784	35.0519

Discriminant Validity

To determine the constructs discriminant validity, three methods were used. Fornell and Larcker (1981) suggest the utilization of AVE, which signifies that discriminant validity is existed if the square root of the AVE is higher than all corresponding correlations.

As disclosed in Table 2, the square roots of the AVE values are steadily greater than the off-diagonal correlations, showing the present of discriminant validity at the construct level.

An assessment of Table 2 shows that no single correlations (ranged from -0.018 to 0.651) were higher than their respective AVE (ranged from 0.7482 to 0.799), thus indicating adequate discriminant validity of all constructs. Lastly, all constructs show discriminant validity if every correlation is less than 1 by an amount greater than twice its respective standard error (Bagozzi and Warshaw, 1990). An evaluation of the standard error in PLS bootstrap outputs demonstrates that all constructs exceed the requirement for this third test. Therefore, adequate discriminant validity is exhibited for all constructs. The results shown in Tables 1 signify the outer model sufficient psychometric properties to move to the structural model assessment to test the hypotheses.

Table 2: Correlation against AVE Square Root

	EP	LS	EC	OC	SE
EP	0.753				
LS	0.585	0.748			
EC	0.091	0.109	0.750		
OCUL	0.651	0.559	0.045	0.799	
SE	0.490	0.408	-0.018	0.574	0.783

Hypothesis Testing and Results

Item loadings which shown in table 1 were acceptable. The hypotheses adequacy evaluation as represented in the model was carried out via R^2 , regression weights, bootstrap critical ratios (t-values) and path variance (Table 3). In H_1 , leadership style is predicted to have positive impact on employee performance. Results in Table 3 concurred this hypothesis with path coefficient of 0.299 and t-value of 7.251. Meanwhile, in H_2 , employee commitment is predicted to have positive influence on employee performance. From Table 3, the results give evidence not support H_2 with the path coefficient of 0.043 and the t-value of 1.238. In H_3 , it is predicted that organization culture has a positive impact on employee performance. The results in Table 3 supported H_3 with the path coefficient of 0.403 and the t-value of 8.635. Lastly, in H_4 , the path coefficient of 0.138 and t-value of 2.951 shows that self-efficacy has a positive and significant influence on employee performance and thus the hypotheses is supported.

Table 3: Direct Model Path Coefficient & T-value

	Path	T-value
	LS==>EP	0.299 7.251
	EC==>EP	0.043 1.238
	OC==>EP	0.403 8.635
	SE==>EP	0.138 2.951

Table 4: Hypotheses Result

	Hypothesized Relationship	Path Coefficient	T-value	Conclusion
H_1	LS==>EP	0.299	7.251	Supported
H_2	EC==>EP	0.043	1.238	Not Supported
H_3	OC==>EP	0.403	8.635	Supported
H_4	SE==>EP	0.138	2.951	Supported

DISCUSSION & CONCLUSION

This research aims is to establish an understanding of the direct effect of leadership style, organization commitment, organization culture and self-efficacy on academic employee performance in Malaysian online distance learning institutions. This research is to develop probable causal relationship among the variables which are leadership style, organization commitment, organization culture and self-efficacy, and employee performance. Based on this, a review from the previous study in the area of leadership style, organization commitment, organization culture and self-efficacy, and employee performance was done. From the initial findings of academic studies, the model was constructed and it's found that leadership style, organization culture and self-efficacy have a positive and significant influence on employee performance except organization commitment. Theoretically, it is not easy to justify the superiority of any model, so empirical testing was performed. This study proposed model to empirically test and to confirm that are positive direct relationship among leadership style, organization commitment, organization culture and self-efficacy on employee performance. In order to achieve this objective, the PLS technique data analysis was adopted. From the above results, it clearly shows that organization culture has a strongest influence on academic employee performance. It is very important that the online distance learning institutions in Malaysia must adopt and promote the right culture in their organizations to ensure the better performance of their academic staff. The second strongest factor is leadership style. Online distance learning institutions top management must practice the right and effective leadership style to ensure they can lead and motivate their academic employees effectively so that it will result a good performance as expected by the organization. The third strongest factor that influences the academic employee performance is self-efficacy. Online distance learning institutions must promote self-efficacy among their academic employees since it has a positive and significant influence on their employee performance. This can lead the employees to perform better in their tasks with a desired quality of work in the organization.

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KNOCKING ON IVORY TOWER DOOR: ACCESS AND INCLUSION OF HIGHER EDUCATION VIA ODL IN PRISON

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ABSTRACT

Open and distance learning (ODL) generally provides the opportunity for lifelong learning experience. As a philosophical concept, ODL is viewed as a long-term process beginning at birth and continues throughout one's life. Therefore, ODL has been accepted as the normal way for prisoners to access education while in prison, delivering courses and content resources to students who are unable to undertake face-to-face education. Almost universally, prison administration across the globe has recognised the importance of providing access to higher education to prisoners. However, learning inclusion, based on research has listed several issues, such as accessibility, choice, environment, and structural barriers, that can affect the provision of higher education via ODL in prisons. Prisoners wanting to complete their studies have reported to face a unique set of administrative, social, and academic challenges that have significantly impeded their progress. Even university academics are often unaware of the predicament of their incarcerated students. Written by a prisoner and his university educator, from limited access to the Internet behind prison walls, this paper looked into the experience of prisoners in accessing higher education via ODL while in prison. Using the qualitative autoethnography design, this paper explored the experiences of a group of prisoners in Malaysia who are studying at undergraduate and postgraduate levels via distance learning, while in prison. In particular, this paper focused on the accessibility of higher education via ODL in prison, the values it brings, and the challenges encountered by these prisoner-students. Data were collected from five participants using personal interviews and were analysed using ATLAS.ti software to identify thematic patterns. The study outcomes revealed that despite being given access to higher education in prisons, the prison environment had negatively affected their studies. Nevertheless, the prisoners were found to attach great value to their studies with the hope of using it for employment purposes after completion of their prison sentence.

Keywords: *Prisoners, Open and Distance Learning (ODL), Autoethnography, Higher Education, Social Justice*

INTRODUCTION

Higher education is provided in a multitude of platforms, prisons, being one of them. However, prisons form a very specific learning environment with distinct challenges, compared to those in the mainstream higher education platform. Delivering higher education to prisoners is challenging due to the conflicting priorities amongst the multiple divisions controlling prisoner activities (Pike & Adams, 2012). As institution that functions to contain offenders and maintain public safety, security is often prioritised over education.

One way of addressing some of the challenges is through the provision of open educational resources (Willems & Bossu, 2012). According to Giosoos, Mavroidis and Koutsouba (2008), as the trend of modern society in searching for flexible forms of education that meet the needs for lifelong learning, such as open and distance learning (ODL), the research interest was ignited, in looking for the possibilities ODL provide to socially excluded people, such as prisoners. The demand for ODL is increasing due to its flexibility to provide a learning environment in any circumstance. It is this flexibility that offers opportunities to people with special needs, such as prisoners. As reported by UNESCO (2002), there are about 880 million illiterate adults globally who have been deprived of access to education due to their inability to be present in conventional physical classroom situations. ODL can be the solution to such a predicament.

ODL generally provides the opportunity for lifelong learning, as a philosophical concept in which learning is viewed as a long-term process beginning at birth and lasting throughout life (Ogidan, 2008). Therefore, ODL has been traditionally accepted as an option for prisoners to access education, while in prison. ODL provides course content resources to students who are unable to undertake face-to-face education (Salane, 2008). It is a conceptual framework within which the learning needs of people, of different age groups and at different educational and occupational levels may be met, regardless of their circumstances.

The above implication is that ODL promotes educational opportunities and social justice by enabling high-quality education to all who wish to realise their ambitions and show their potential. According to Farley, Pike, Demiray, and Tanglang (2016), converting this vision into practice has resulted in a massive effort by prison institutions around the world, to provide higher education in prisons. Almost universally, prison administrators from around the globe have recognised the value of providing access to education for prisoners.

However, prisoners studying higher education via ODL in prison face numerous challenges in their efforts to ameliorate themselves. These challenges include issues such as accessibility to education materials, choice of education courses, prison environment and structural barriers that affect the provision of higher education via ODL in prison. Other than that, they also face a unique set of administrative, social, and academic challenges which can significantly hinder their progress (Farley & Pike, 2018). Even university academicians are often unaware of the circumstances and the challenges faced by these incarcerated students.

LITERATURE REVIEW

The concept of educational inclusion and rights to education supports the belief in social justice (Tait, 2013). Applying this concept to prisoners, education is a human right of any prisoner. In democratic societies, equity in access to education is considered a basic human right (Willems & Bossu, 2012). Hence, education for prisoners is important, not only as a basic human right (Emmert & Eur, 2011), but also the fact that there is no justifiable reason to deny these rights to the incarcerated citizens (Shamrahay Abd Aziz, 2010).

Almost universally, prison administrations around the globe have recognised the importance of providing access to higher education to prisoners. Farley et al., (2016), for example, assessed the delivery of higher education into prisons in Australia, United Kingdom, Turkey, and Nigeria concluding that these countries have extensively provided higher education to prisoners via ODL. Iturralde (2018) and Linardatou and Manousou (2015), on the other hand, reviewed how the two countries of Ecuador and Greece were taking the first steps in providing higher education via ODL to their prisoners. Both researchers suggest that the delivery of higher education in prisons is possible via ODL with the collaboration of local universities. The same development can be seen in Pakistan, Thailand, Philippines, and Malaysia where local universities such as Allama Iqbal Open University (Aziz, Chuadhry, Liaquat & Asim, 2014), Sukhothai Thammathirat Open University (Sungkatavat, 2009), University of Southeastern Philippines (Webmaster, 2018) and Open University Malaysia (Rozeman & Mohd Ramli, 2014) have been facilitated higher education into prisons of the countries in which the universities are based in. This suggests that ODL can become the most appropriate, reliable and important method to facilitate higher education behind prison walls (Diana, 2011).

ODL promotes educational opportunities and social justice by enabling the university to provide high-quality education to prisoners in prison (Chigunwe, 2014). ODL enables prisoners to study at their own pace, to learn independently and to have fun while learning (Seelig & Rate, 2014). This could alleviate the stress and boredom that are commonly known as ‘pains of imprisonment’ endured by prisoners (Sykes, 1958), which is particularly significant for prisoners with long sentences or with mental health issues (Farley & Pike, 2016). Thus, the possibility of ODL in providing higher education access to inmates helps to not only address the perennial problem of learning exclusions (Pike & Adams, 2012; Farley & Willems, 2017), but also encourages rehabilitation of prisoners (Forster, 1976; Pike, 2010; Hughes, 2012; Pike & Adams, 2012; Pike, 2014; Costelloe, 2015; Farley & Pike, 2016; Darke & Aresti, 2016; Farley & Hopkins, 2017; Baranger, Rousseau, Mastroilli, & Matesanz, 2018). These researchers agree that those prisoners, who persevered with their higher education learning, developed a positive student identity, reducing isolation from incarceration, having new perspectives in life, and being transformed as a person in some way.

Higher education in prison also frames a universal remedy for a host of ‘social ills’ related to mass incarceration (Castro & Gould, 2018). Higher education in prison is presented as a way to reduce recidivism (Vacca, 2004; Travis, 2011; Farley & Pike, 2018), reduce prison expenditure (Aos, Miller, & Drake, 2006), ensure safety and security inside prison (Farley & Pike, 2016), assist with integration and the period of post-release (Fabelo, 2002; Bynner, 2009) and to address high rates of unemployment after release from prison (Nally, Lockwood, Ho, & Knutson, 2014; Duwe & Clark, 2014; Costelloe, 2015; Duwe, 2018). This suggests that higher education in prison holds many social benefits that not only benefit prisoners, but also the society.

However, higher education via ODL poses challenges to prisoners who wish to pursue their studies in prison. As a closed institution, prison management always prioritises security, which is the primary concern. Furthermore, there are rules in prison, written or unwritten ones that define how prisoners should behave, what they should have and what they should not have (Schuller, 2009). This radicalising environment (Frolander-Ulf & Yates, 2001) affects the implementation of higher education programmes in prisons where digital technologies and usage of the Internet are severely restricted, thus causing limited access to ODL materials and tutors (Reuss, 1999; Hughes, 2012; Pike & Adams, 2012;

Champion & Edgar, 2013; Hopkins & Farley, 2014). Classes that are already minimal are regularly cancelled for unforeseen reasons, which have fuelled assumptions that the intended purpose is to exert control by thwarting educational progress (Runell, 2016). This hints that higher education in prisons represent a paradox created by the existence of opportunities for educational advancements that are limited by institutional boundaries, designed to repress individuals within, where questioning authorities are not tolerated (Van Gundy, Bryant, & Starks, 2013). This situation is in contrast to higher education environments where colleges and universities are theoretically open places and spaces that encourage questioning (Farley & Pike, 2018). Thus, operating higher education programmes in prison could be complicated as it requires security adaptation (McCarty, 2006) to mitigate the hostile environment in the prisons, where it is designed for containment and punishment (Greg, 2007).

Other than these challenges, Adams and Pike (2014), in their research, noticed that prison officials are generally not supportive of higher education programmes in prison. The prison officials are seen to question the need for prisoners to gain diploma and degree qualifications in prisons, and they are even seen to resent or envy prisoners who are able to further their higher education while incarcerated (Adams & Pike, 2014). These sentiments shown by prison officers affect the successful completion of prisoners in their study. Prison officers, are the people who hold authority, play the important role in a prisoner's education as they have the capacity to either encourage or discourage prisoners (Kjelsberg, Skoglund & Emstad, 2007; Moore & Mokhele, 2017). Adding to these problems, prisoners also face financial constraints to pay their tuition fees (Farley & Pike, 2018).

The study was found to be intriguing, as it explored the experiences of prisoners who underwent higher education via ODL in prison. This exploration also offers a unique entry point into the world of prisons or 'inmate society' as referred to by sociologists (Hughes, 2012). By employing qualitative autoethnography approach, the following questions guided this study:

1. Are prisoners in Malaysia given access to pursue higher education via ODL in prison?
2. How do prisoners value higher education via ODL in prison?
3. What challenges did the prisoners encounter while pursuing their higher education via ODL in prison?

RESEARCH FINDINGS

This research was conducted at the Kajang Prison, Selangor, Malaysia by a student-prisoner and his university educator. The fact that the first author is a prisoner, who understands criminal culture and idioms, has put him on the different contexts in comparison to other researchers, thus opening doors to the avenue of investigations that might otherwise be closed (Ross, Jones, Lenza & Richards, 2016). By using personal interviews with other student-prisoners, and also by the first author's own experiences, this study drew on the participants' experiences, views and beliefs regarding their living experiences as incarcerated higher education students. The research findings are presented in three predetermined themes to answer the research questions. In order to protect the identity of the participants, this study refers to participants as; Participant 1 (P1), Participant 2 (P2), Participant 3 (P3), Participant 4 (P4) and Participant 5 (P5). The findings have limited generalisability; however, since they are based on experiences shared by the prisoners, they can potentially enhance the understanding regarding the accessibility of higher education in prison and the benefits it brings, together with the challenges faced by these prisoners.

Access to Higher Education via ODL in Prison: Knocking on the Ivory Tower Door

The findings show that prisoners in Malaysia are given adequate access to higher education in prison. This can be seen from all the participants who shared their respective journeys, participating in educational programmes in prison. One participant even reported that he was even given the opportunity to study from his post-secondary education until his post-graduate higher education. He is now a Ph.D. candidate with OUM.

“I’m a BBA and MBA holder which I acquired here in prison. Even my SPM and STPM were taken here” (P5)

The other participants also expressed that they were given substantial access to higher education via ODL as each participant introduced themselves and informed the researcher the courses they were taking currently and from which university:

“I’m doing Master in Business Administration with Open University Malaysia... And yes I’m studying through distance learning” (P1)

“For now I’m studying Diploma in Management with OUM” (P2)

“I just finished doing my BBA [Bachelor of Business Administration] with OUM and currently applying for my Master with USM [Universiti Sains Malaysia] I’m doing distance learning for my research paper” (P3)

The participants also shared that they were allowed to use computers and Internet connection for educational purposes. The allowance of computer and Internet usage enabled prisoners to access educational resources provided by OUM through their main website. From the website, prisoners were able to gather educational material from the digital library, participate in online forums through OUM myINSPIRE and also communicate with e-tutors using the built-in chat functions. Most of the participants agreed that the OUM website was informational and user-friendly, assisting them in studying through ODL:

“The OUM portal is informative and conducive. I can get everything I need there. There is no doubt OUM has the best educational online portal” (P1)

“The online facilities provided by OUM are very good. The website is easy to understand. The learning module also helpful” (P2)

The ownership and provision of computers, however, are the responsibility of the prisoners themselves. The prison management only provides the classroom and Internet connections for the purpose of the programme. Other necessities such as stationery and reading materials need to be provided by the prisoners themselves, as reiterated by the participants:

“We bought our own facility such as computers, stationery, books, and practically everything. Prison only provides the classroom and Internet” (P2)

“Basically the facility like computers, stationery, and reading material are provided by family, not prison official” (P3)

Participant 5 stressed that every prisoner received the same access to higher education regardless of their courses. This showed that every prisoner had equitable access to higher education via ODL in prison:

“Everyone here is getting the same facility. It does not count whether you are doing Diploma, Degree, Master or Ph.D. All same” (P5)

When asked whether prisoners are given the option to choose their desired higher educational courses, most of the participants expressed that they were only allowed to choose what was set by the prison management:

“No, I’m not given any option other than MBA. Only MBA for prisoners who want to do Master. I really like to study Law by the way” (P1)

“During my application, prison official only allowed me to take Diploma in Management. No other courses available for prisoners, only that one” (P2)

“The lower management of Prison Department trying to discourage me from choosing the course I like, instead they suggest that I only can choose the course they offered through OUM..... I’m not supposed to choose, but I choose my own part anyway” (P3)

The findings revealed that prisoners funded their own studies. This is either through the assistance of their families or from financial aid from NGOs or from OUM itself. Most participants also noted that the fees imposed by OUM were reasonable as OUM also assisted by waiving certain fees for the prisoners:

“My family who the one paid [the fees] for me” (P2)

“So far my educational financial is sponsored by NGO. Buddha Light International Association” (P3)

“For me, the fees are quite reasonable since they waived the first semester fees for me. It’s really helpful. And now I’m working on scholarship” (P4)

The Values of Higher Education via ODL in Prison Brings: A Lifeline

Higher education via ODL in prison brings hope in a place that often seems hopeless. All the participants reported that they felt empowered by being able to pursue higher education via ODL in prison. This empowerment was translated by the students’ identity, which they acquired while learning. As expressed by the participants, a sense of belonging to a learning community is important to the development of social identity in prison:

“Higher education is highly valuable to me here. It helps me to think that I’m not a prisoner but a student. So there is a mindset paradigm shift for me, which keeps motivating me” (P1)

“Higher education helps me to review back my confidence as a student” (P3)

ODL enables prisoners to study independently anytime and anywhere. With this advantage, prisoners can manage their own learning process and ease the ‘pains of imprisonment’ they endure especially in a place where time seems to move slowly. These advantages greatly influence prisoners’ daily lives in prison, as reiterated by participants:

“I found distance learning is very useful for me because it allows me to study at my own pace” (P3)

“Being able to study higher education distance learning make time flies faster and it keeps me busy from thinking about my sentence” (P4)

“Through higher education, I can spend my time wisely here. Time flies very fast by studying” (P5)

One participant even reported that higher education through ODL in prison eased his diagnosed depression. He stated that he no longer depended on his medication after being able to study in prison:

“I’ve been taking escitalopram and lorazepam since 2011 [prior to his sentence]. I’m too depressed because of my case.... But after a few years in prison, I gradually stop taking my medicine and completely stop after I start my study.... Higher education helps me to think clearly especially for my depression” (P2)

The transformational values offered by higher education in prison can elevate confidence among prisoners and prepare them for a better future. Apart from sharing how higher education has changed them within, all the participants showed their confidence that they were going to secure a decent job upon release:

“I’m fairly confident that I can get a good job with my qualification when released” (P2)

“Higher education will get me back on track and I really certain with the qualification, I can secure a decent job after release” (P4)

“For me, higher education matures me a lot; I know how to differentiate what is good and bad. The knowledge acquired also prepare me for my release and of course for a good job” (P5)

All the participants perceived themselves to be more confident, determined, focused and empowered by their learning. These values would help them to overcome the barriers which have yet to come.

Challenges in Higher Education via ODL in Prison: Overcoming the Wall Barriers

Many participants reported that they faced many challenges in pursuing their higher education via ODL in prison. One of the main challenges is the prison environment itself, which was negative:

“Prison environment for me is noisy, annoying and disgusting. Been here almost two decades, bro. I’ve seen everything, hear everything and taste everything. Nothing is good in prison” (P5)

“Living around convicts sometimes things can get very hostile or intense very fast.... The restricted environment makes me less accessible to reading materials and resources that I need to study” (P3)

In a closed environment such as prison, every movement is monitored and controlled. Adding to this problem, prisons are sometimes overcrowded, where the number of prisoners exceed the capacity of the institution. This limitation exerts a large amount of influence on the prisoners, especially in adapting to prison conditions while pursuing higher education via ODL:

“Prison environment here is packed like inside a sardine can. I’m sharing with other 9 prisoners in my room. For me to study in the room is impossible. Can you imagine 10 people sharing one toilet? I have to wake up as early 3.30 in the morning every day to shower because the room’s door opens at 7.00 o’clock sharp. How to study at night?” (P4)

“Everything in prison is limited especially to my movement. Limited movement limits my freedom to study because I cannot use the education facility whenever I needed. For example, I don’t have easy access to my PC [The computers is located in the classroom where prisoners only allowed to use at the designated time on weekdays]. I have to write in my cell room before I can type it on my PC. Remember, there is no table and chair in my room; I have to write on the floor. It’s very tedious and painful” (P1)

The interviews also revealed that prisoners faced discrimination from the prison official, who are supposed to protect, serve and help rehabilitate prisoners so that they can become better people:

“..... Prison officers also always provoke me and condemn me for no reasons” (P2)

“There are two types of prison officers; upper management and lower management. The lower management officers always create problem with the prisoners here causing us unable to study or make us stressful. They always pressure us in a way that they always try to find our mistakes and punish us all. The upper management, on the other hand, made our life worst when they always turned down our request [for educational needs]. They even denied my request for my stationeries” (P4)

Other than having problems with the prison officers, prisoners pursuing higher education via ODL in prison also faced problems among themselves:

“There are certain persons here [the other prisoners] who always bullying other people, ragging and pick a fight on everyone. It’s like living in the jungle.... Those troublemakers are not even study. They use the program [higher education programme] just to spend their time here” (P2)

“Some of the prisoners are really troublesome. They are not here to study, they even admitted themselves, they are not shy of it, and they really proud to be the troublemakers in the program [higher education programme]” (P3)

DISCUSSION OF THE FINDINGS

The findings suggest that prisoners in Malaysia are given adequate access to higher education via ODL in prisons despite several shortcomings. Most data captured revealed that prisoners had substantial or equal access to higher educational opportunities. This adequate access was expressed by all participants. All participants also informed that they were given permission to use computers and Internet connection for the purpose to study. The permission to use the computer and Internet connection for educational purposes did affect their progress positively in the programme. This digital access enabled the prisoners to connect with the online resources via ODL, while in prison. Hence, the ODL programmes served as a medium to bridge the gap between face-to-face classes and being able to study without leaving the prison premises. This was also advantageous as security risks were minimised due to the non-physical contact with university academicians. Moreover, the digital medium allowed for students to progress, even when and if the prisoners were transferred to other prisons or even when they were released from the prison. Thus, the findings suggest that the open access and online blended learning have become the backbone of ODL; enabling prisoners to pursue higher education in prison despite all the circumstances.

The research findings also revealed that most prisoners funded their own higher education studies. This showed that the government was able to save costs in not being required to pay for prisoners’ education. Costing in this area, of prison ODL education, when compared to other rehabilitation programmes that incur millions of ringgit of taxpayers’ money (Hakimah Yaacob, 2012), was hence, nil. The willingness of prisoners to fund their own studies also implied that instead of being ‘pushed’ to embark on higher education via ODL in prison, they could work towards the intrinsic ‘pull-factor’ for prisoners, to rehabilitate themselves.

The findings showed that all the participants attached a great value to higher education via ODL in prison. Hence, higher education via ODL in prisons offered many social benefits that did not only help to boost the confidence among the prisoners, but also to transform their lives and prepare them for a better future. It also has the capacity to encourage prisoners to take some control over their lives and to change their identity – from seeing themselves as a ‘criminal’ or a ‘failure’ to someone who is worthy. The first author himself had experienced the transformational values of higher education via ODL in

prison where he believed that higher education stimulated and motivated him as a prisoner to live up to his potential, as a useful human being. The first author narrated that he did not have much confidence in his ability to learn before prison sentence. In fact, he described himself as lazy and insecure. The education he received in prison somewhat boosted his confidence and proved that he was capable of learning, which he did not believe he could earlier (Hizwan, 2018, pg. 4). In many respects, the first author compared this experience to Plato's *Allegory of the Cave*. For most part of the time in prison, the first author believed that he was living in a 'cave' and his every action, behaviour, and attitude was reflective of this cave, a cave that he was not even aware of, had existed. As he began his journey in higher education via ODL in prison, awareness of the cave began to surface. The struggle of the learning process, in many aspects, brought him 'outside' the cave, exposing him to a world he did not know existed. Similar to many other participants in this study, this outside world gave him hope in a place that seemed hopeless. To the first author, he was never again a prisoner of the cave.

Studying higher education via ODL in prison, nonetheless, could be challenging given the noise, chaos, and overcrowding issues that typically reflect the prison facilities. As pointed out by the participants, such negative environment had an adverse impact on their progress in pursuing their studies in prison. Adding to the obstacles, the participants also claimed that prison officers were uncooperative and discriminated prisoners who participated in the programme. While the prison officers should play a pivotal role in directing participants towards higher education through their routine exercise or broad discretionary powers, this was not always the case. Their actions and behaviour were characterised by the Prison Department's main priority, which was to maintain order. Hence, higher education via ODL in prisons was classed as a pastime and an unpaid recreational activity that helped to maintain order, instead of serving as a means of rehabilitation. It should also be mentioned that there is a political dimension to the provision of higher education in prisons, which exists beyond the institutional level. It could be said that higher education, instead of being a tool for living, can also be a weapon of control in the hands of the prison authorities (Fitzgerald & Sim, 1979).

The participants reported that some prisoners in the programme showed lack of genuine commitment to studies, hence causing distractions to the learning process. It is understandable that the prison sub-culture may negatively influence prisoners' attitude and behaviour towards the programme. However, it should be noted that this lackadaisical attitude may also be a result from distressed feelings over various elements of confinement involving excessive control and blocked efforts to enjoy earned privilege in pursuing higher education via ODL in prison. Consequently, some of these prisoners abandoned their efforts to study in prison and started to abuse the educational facilities, under the excuse of doing so, as a coping mechanism, to avoid "chasing 'carrots' that might not be obtained" (Crewe, 2011, pg. 458).

Despite all these challenges, prisoners pursuing their higher education via ODL in prison remained very positive about the benefits of their studies for future employment and opportunities. This study revealed that they were indeed motivated and committed to their studies as they strived to keep on learning despite the limited and hostile environment of the prison. They held onto their students' identity, which they acquired through the learning process as a lifeline in getting through their sentence in prison. These transformational values are fundamental to successful settlement on release and therefore, can become the focus for future longitudinal research, based on this preliminary study.

CONCLUSION

Written by a prisoner and his university educator from the limited access of the Internet behind a firewall in prison, this study explored the experience of prisoners in accessing higher education via ODL in prison. Through the method of personal interviews with other incarcerated students, and the first author's own experience, this study probed into the values of higher education via ODL in prison in transforming prisoners to be better individuals, thus preparing them for their future. Despite all the challenges faced by the prisoners who pursued their higher education via ODL in prison, they still attached great values to their studies and hoped to use them to secure employment upon their release. Ultimately, ODL in prison has the potential to transform the lives of prisoners. As once highlighted by Nelson Mandela, 'education is the most powerful weapon that you can use to change the world' (Mandela, 2003).

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MARKETING AND RECRUITMENT IN A COMPETITIVE ENVIRONMENT: A CASE STUDY

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ABSTRACT

Marketing in the Health industry has been a great challenge in Sri Lanka due to the constant influence of professional bodies and trade unions. The main competitor is the state, which provides free/subsidised education leading to more entry barriers to private providers like the International Institute of Health Sciences, (IIHS). The “IIHS Research Road Show” (IIHS -RRS) was an innovative marketing strategy was initiated by IIHS to organize a data base of potential nursing students for the Bachelors in nursing programme. This is a CSR/Marketing programme which conducted a series of workshops on Research process, the module many students fail to complete during their Diploma. The combination of activities of social media & direct professional contact lead to ethical, sustainable, cost effective outcomes with high quality awareness. Six months of IIHS -RRS created a record by training of 3400 nurses in research with 25% recruitments of which was the largest batch of registered students in any private institute in Sri Lanka.

Keywords: *Data Base, Ethical, Sustainable, Professional Bodies, Trade Unions*

INTRODUCTION

Traditionally in Sri Lanka, heading back to many centuries, the sick would be taken care of by relatives of the sick family member. However, as decades passed by, sick family members would be transferred to hospitals and institutionalised thereafter. Progressively, people – who require caring, would be nursed by staff in institutions, thereby making the profession of nursing highly institution driven (Jayasekara & Mccutcheon, 2006).

Nurses play an integral role in sustaining a healthy community and providing lifesaving treatment and interventions. Therefore, it is of utmost importance that institutes, state and private, invest in nursing education to provide high quality programmes to maintain international standards. Furthermore, with the advancing global health needs and diversification of patient populations, it is even more imperative.

International Institute of Health Sciences (IIHS) is an International University Learning Center based in Sri Lanka which predominantly provides education to healthcare students and professionals from certificate level to the PhD level. As an International University Learning Centre, IIHS is a privately run health care organisation and is a regional centre which prides itself in providing accessible, affordable whilst underpinning the concept of ‘inclusivity’ to provide indiscriminate education to its consumers. Furthermore, adding to its regional presence, IIHS provides high quality programmes from Universities from United Kingdom, United States of America, Australia, Finland and Malaysia. The concept of an International University Learning Centre ensures that the international programmes are delivered in Sri Lanka are provided to students at an affordable fee which is conducive to the local fee paying students. In addition, IIHS is a major player in research and community engagement in Sri Lanka with the aim of providing a holistic health care professional to the regional health care arena.

IIHS delivers the Bachelors in Nursing program, an international programme offered by Open University Malaysia. This programme is directed at state and private sector nurses who hold a Diploma in Nursing. Traditionally, the programme is pursued by state sector nurses due to the value additions it provides with its work and study concept and affordability.

In 2016 IIHS commenced the IIHS Research Roadshow with the aim of teaching the Research module to the 3rd year state sector nurses completing the Diploma in Nursing. The project proved to be successful from academic and marketing viewpoints due to the increase in community engagement and branding. Due to the known barriers and heavy regulations in the state education sector, the IIHS Research Roadshow was strategically carried out in many phases to avoid hostility. Many positive outcomes were yielded at the completion of the IIHS Research Roadshow in 2016. This paper will discuss the motivation behind the IIHS Research Roadshow, challenges encountered, outcomes yielded and recommendations that could be considered for marketing products in a highly regulated industry.

LITERATURE REVIEW

Though Sri Lanka boasts a rich and vibrant heritage of 2500 years, Sri Lanka recently submerged from a 30 year civil war which has been a key disruptor of financial and social security in the island. Over the past 8 years with increase in quality of governance, financial stability and social refuge, Sri Lanka bettered its reputation as the safest and fastest economies in South East Asia. Furthermore, several government initiatives ensured that Sri Lanka would become the next ‘regional hub for education’. According to the most recent statistics, 17% of the population enrolled in tertiary and is 98th (out of 131) in the World Economic Rankings (Global Competitiveness Report, 2014–2015).

At a global level, Sri Lanka is well renowned for its free education system which ensures that students from the primary level right through to the tertiary level will not have to pay tuition fees for their academic endeavours. Despite such opportunities, the state university system is highly competitive and ensures that a mere 10% entrance of the student population to the state university system (*University Grants Commission, 2016*). The existing higher education system comprises of 17 state universities and 6 Private University Colleges. In addition to this, the private education system in Sri Lanka has been existent for 15 years and consists of University Colleges and International University Learning Centres.

Presently, two types of nursing degree programs are made available in Sri Lanka. 5 state sector universities provide nursing degrees where the student is awarded a B. Sc. in Nursing. However, only a handful of students gain entrance to these programs. Furthermore, the Open University in Sri Lanka provides a ‘top-up’ degree which is made available to the nurses who have completed the 3 year Diploma from the Ministry of Health. Additionally, a very minute handful of private sector institutes offer degree programs for nurses (Jayasekara & Amarasekara, 2015). Due to the deficiency of available Nursing degrees opportunity exists for private institutes to deliver high quality international programs which would offer solid outcomes. The table below distinctly identifies the market forces in the Sri Lankan education sector for nurses.

Table 1

Regulators	Service Providers	Funders	Consumers
MOHE/MOH	State Universities	State – Free	Opinion leaders
Professional Bodies	Competitors – Local and Global	Out of pocket	Technology
Trade Unions		Banks – Student loans	Student profile
			Values

Regulators:

The Ministry of Higher Education (MOHE) and Ministry of Health (MOH) hold a majority of governance of the regulation whilst professional bodies and trade unions influence decision making roles. Effective regulation ensures accountability for funding whilst protecting the interest of students and safeguarding the education system.

Service Providers:

Whilst State Universities are the main service providers for the Sri Lankan education system, local and global competitors are present to provide students education for a fee.

Funders:

The state sector of Sri Lanka provides education free of charge. However, as mentioned previously, out of pocket services exist for students who wish to pay a fee for education. Students are also supported financially through student loans.

Consumers:

In Sri Lanka, many consumers are largely influenced by opinion leaders. However, with the technological advancements, social media has played a role in swaying views of students. The student profiles are further influenced by values based system.

Over the years, IIHS engaged in traditional marketing methods to attract nursing students in the state sector who have existing Diplomas. These methods include advertising on newspapers, utilizing social media and digital marketing and advertising on radio and television. Furthermore, IIHS through its professional relationships engaged in numerous conferences and state sector health care events in build positive affiliations whilst promoting education to the said cohort. Despite the positive outcomes, the management of IIHS identified the dire need for a marketing archetype that would align with global health and education outcomes and complement the UN Sustainable Goals. In order to achieve this, the IIHS Research Roadshow was implemented with the following objectives;

Objectives:

1. To improve the Evidence Based Practice, International Nursing, Continuous Nursing Education among nurses to align with the UN Sustainable Development Goals (SDG 04).
2. To promote and recruit candidates for the Bachelors in Nursing Science (BNS) program through organizing a data base of potential students.
3. To create a sustainable network among nurses and IIHS promoting and supporting education.

4. To expand the opportunity for IIHS students to be involved in community projects.
5. To improve IIHS branding as the leader in Nursing training through CSR with a view to uplift the standard of nursing profession in Sri Lanka.

In order to reach the objectives, the following action plans were followed:

Action Plan 1: Pre- Workshop Activities – “Inception”

The inception period of the project included 2 components – (i) Advocacy and promotion and (ii) organizing resources.

Advocacy and promotion of the Research roadshow included building rapport with the Principals of the 17 Nursing Training Schools in Sri Lanka to gain concurrence for the project. Furthermore to inspire brand presence within the Nursing Training Schools essential nursing books were donated with IIHS logos. In addition, Bachelors in Nursing posters (IIHS and OUM logos) and clocks with IIHS logos were displayed in the schools.

In terms of organizing resources for the workshop, IIHS academics and 3rd year students from the fields of nursing, physiotherapy and bio medical science were mobilized with caution not to disrupt academic activities at IIHS. The academics involved consisted of individuals representing the academic, marketing and finance departments. These individuals were utilized as trainers to teach research to the nursing students. Furthermore, handouts and brochures were distributed to the students as learning tools. Other resources utilized includes AV equipment and the laptops for the use of the learner management system to facilitate e-learning. The research workshop was scheduled with minimal disturbance to their ongoing Nursing Diploma.

Action Plan 2: Workshop 1 – “Orientation”

This was the very first workshop where IIHS resource members came in contact with the state sector nursing students. The objective of this primary workshop was to introduce research at a basic level whilst motivating nurses for academic and career progression. This session was conducted in each of the 17 NTSs and paved the way for students to pick a research area of interest. Videos of student experiences of research alongside case studies of conferences and research outcomes were displayed for students to enable further motivation. Thus, motivating students and branding IIHS through existing research achievements was an integral part of the strategy.

In an attempt to promote the key product (Bachelors in Nursing program) product the outcomes of the program was highlighted whilst promoting foreign employment through the validity and the recognition. IIHS noticed that Facebook was highly utilized amongst nursing students of Sri Lanka and that a majority of communications occurred through Facebook. Therefore, informal chat groups were made on Messenger between students and an academic from IIHS.

Action Plan 3: Workshop 2 – Initial Registration

After meeting students during the first workshop, a second workshop was organized to enable more learning outcomes, especially related to academic writing, referencing and data analysis. Furthermore, students were introduced to the concept of International Nursing and the available pathways. Group discussions were enabled between IIHS students and state sector nursing students to further the concept of building an International Nurse whilst achieving research outcomes.

In terms of promoting the Bachelors in Nursing program, a more focused approach was taken during this workshop. The unique selling points of this program was highlighted more during this workshop and understanding the social and financial background of state sector nurses, the work and study concept was introduced to promote work life balance during the study period. Furthermore, the finance team from IIHS highlighted the financial support available should they join the program, including available student loans. The workshop provided adequate time and space for potential students to have “one on one” chats with the resource personal from IIHS.

This workshop also proved to be technologically shrewd. All nursing students were registered on the “IIHS NTS Moodle” platform which created a master-database of all students registered on the Moodle. The Moodle platform is mobile friendly and convenient for all students to access nursing modules related to the 3rd year nursing state sector curriculum. For students who wished to join the Bachelors in Nursing program at IIHS following their Nursing Diploma, the option of an “Early Bird Registration (EBR)” was provided which provided a discount for students who wished to register prior to a declared date.

In terms of branding, souvenirs (branded teddy bears) were provided to each student who registered through the EBR system. Furthermore, photos from the workshop were used as promotional material on Facebook and advertised the initiative further to nursing students in the region, which in return created further publicity through ‘likes’ and ‘shares’.

Action Plan 4: Follow Up and Conversion – *Recruitment*

The recruitment phase was wholly handled by the IIHS Marketing Team where each student was contacted using the EBR system. These connections were made through the existing database on Moodle. Furthermore, due to its popularity in usage, if previous consent has been provided, students were also contacted on Facebook and chat groups on Messenger.

This system ensured that a deadline was provided for students that were registered on the EBR system. A noticeable increase in registrations were identified during the EBR period due to the discount provided to the students.

Action Plan 5: Ensuring Sustainability – *Access to the consumer*

The inauguration events of batches were digitally marketed for further promotions. Nursing leaders were invited for each inauguration event. At such inaugurations, students were introduced to academic staff and student support staff. Furthermore, recognizing the lack of IT knowledge in certain student cohorts, further support was given to ensure access to vital information (e-libraries, moodle activities etc).

In order to create sustainability of the project, it is vital to build bridges and minimize gaps between the state sector and private sector education institutes. Sustainability of the project would ensure further access to nursing schools to offer support for education whilst providing the opportunity to promote IIHS programs within the schools.

IIHS identified that Nursing Principals and Tutors were not only main stakeholders of the project, but also central opinion leaders for the initiative and nursing education in the country. In order to build better relationships, the Principals and Tutors of all nursing schools were invited for IIHS international conferences and workshops. Furthermore, in an initiative to promote nursing education amongst the nursing leaders of Sri Lanka, IIHS and OUM hosted “Create a Generation of Nursing Leaders” workshop at Open University Malaysia, Kuala Lumpur in 2017 and 2018. This provided the leaders the opportunity to participate in an international workshop which they would otherwise have minimal access to. In addition, IIHS and OUM provided them with the opportunity to witness the OUM annual graduation ceremony where Sri Lankan nursing students (from IIHS) would graduate with a Bachelors in Nursing program. This initiative provided the leaders an occasion for the leaders to witness an event that brings national pride for nursing education.

FINDINGS

One of the major feats of the IIHS Research Roadshow was seen as the completion of the research module in 16 of the 17 NTSs in the island. Though research is rarely utilized in the state sector nursing schools, the method of teaching research increased the student affinity towards research. In 2016, an approximate of 3400 nursing students were accessed for the Research Roadshow and an estimate of 3000km was travelled over a period of 6 months. In addition, in 2016, 5 research projects were published by nursing students from rural areas of Sri Lanka. Furthermore, IIHS created a platform aligned with global e-learning standards through Moodle and this ensured accessibility to global e-libraries and learning material for nursing students whilst creating critical thinking health care professionals.

In terms of marketing and promotions, though a noticeable success was seen it must be highlighted that IIHS accessed a cohort of students in an extremely regulated marketing environment. The target audience is heavily governed by the state sector but was able to gain good marketing outcomes by building rapport between the 2 polarized groups. A database of 3400 student nurses with diplomas was obtained with the view of registering the students for the Bachelors in Nursing programs. Out of this number, 1500 provided consent to join the Bachelors in Nursing program and a further 25% registered prior to the commencement of the program. Chart 1 also depicts the increase in student numbers following the IIHS Research Roadshow over a 10 year period.

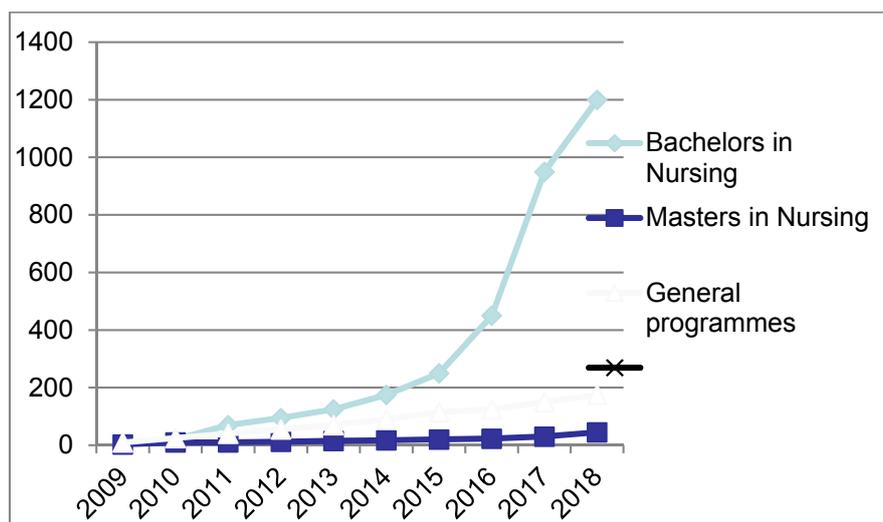


Chart 1

In addition, to the quantifiable outcomes, this initiative provided IIHS students a great opportunity to develop leadership and team building skills through community engagement.

DISCUSSION

It is possible to Marketing a product in a highly regulated environment, but extreme caution must be taken when approaching a cohort that is influenced by opinion leaders and conservative folk. The IIHS Research Roadshow ensured that the workshops were conducted step wise with a respectful approach. In certain instances, the primary focus of the organization ought to be community service and engagement rather than marketing products. A reasonable rapport should be created amongst those at the grass root level prior to selling key products. IIHS strategically invested time, energy and finances in building such rapport.

Sustainability is a key point when heading such initiatives as sustainability of the product would lay a solid foundation of trust within the community. A needs assessment could be carried out prior to the initiative to understand the ground level and grassroots concerns of the community and consumer. In the case of the IIHS Research Roadshow, an initial needs assessment was not formally carried out, however, the higher management of the institute regularly builds positive rapport between IIHS and the nursing leaders with the aim of understanding the needs at the grass root level. Highlighting outcomes and unique selling points are imperative when selling a product to a community that does not interact regularly. In this case study IIHS portrayed IIHS alumna who had completed the program that found financial and social prosperity following the completion of the program.

CONCLUSION

The IIHS Research Roadshow can be used as a case study to highlight how marketing strategies can be implemented in a competitive and regulated environment by taking an appropriate systematic approach. By taking such strategies desired outcomes can be yielded. Furthermore, it is important to underline that in addition to the measureable marketing outcomes that have been harvested, a social impact can be created which would promote sustainability of the project.

ACKNOWLEDGEMENT

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MOBILE-ASSISTED LANGUAGE LEARNING APPLICATIONS FOR MUSLIM OLDER ADULT LEARNERS IN MALAYSIA

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ABSTRACT

This concept paper focuses on mobile-assisted language learning applications to support Muslim older adult learning in Malaysia. A systematic review has been undertaken from 2008 to 2018 concentrating on theoretical and conceptual perspectives and is presented based on the concept of mobile language learning involving Muslim older adult learners in Malaysia. This serves as an initial study leading towards the proposed innovative use of mobile-assisted language learning using Android Studio for Muslim older adult learners to learn the Arabic language in an informal setting. Learning Arabic grammar and pronunciation skills based on the authentic Quranic Arabic is essential for Muslim older adults in fulfilling the five pillars of Islam. Due to the learners' characteristics, informal lifelong learning is often affiliated and advocated among the population in urban cities and rural areas alike. The Malaysian government has long since espoused lifelong learning for older adults since the Ninth Malaysia Plan (2006–2010) in ensuring active and productive aging among Malaysian older adults. Various policies and initiatives preceded outlining achievable objectives for older adults' access to knowledge, training, and education. Access and offerings of mobile technology to such population extended the potential for alternatives in informal lifelong learning. Older adult learners in the study not only own a smartphone but are also familiar with the basic functions of mobile applications. Evidently, any missed references are possible, especially involving conference proceedings and various resources from non-English articles. Notwithstanding, the coverage is confined in the area of interest of the researcher. Even though Malaysia has taken various initiatives to support older adults' lifelong learning, few documented publications were established on mobile learning applications usage for language learning to promote lifelong learning. These are among the gaps that Malaysia currently has and in demand as part of the emphasis on aging society by 2030.

Keywords: *Mobile-Assisted Language Learning, Older Adult Learners, Lifelong Learning*

INTRODUCTION

Technology-assisted learning is often associated with most types of learners but often assumed to be challenging when it comes to older adults. Perhaps this concept of unique adult education recommends specific instruction for specialised learning needs in relation to the rest of the population. While andragogy involves self-directed learning, problem-centred activities and participative decision-making (Knowles, 1980), older adults or geragogy differs in the sense that it is more towards supervised decision-making, instructor-directed learning and person-centred activities (Schuetz, 1982). Despite its nature, geragogy often becomes the field of study of praxeological, empirical and theoretical investigations (Maderer & Skiba, 2006).

Many of the studies established on MALL promote human cognition with technology and attempt to employ features of mobile technologies especially mobile phones (or smartphones). Learners' readiness and acceptance in using mobile technology for language learning, therefore, needs to be considered in attaining success for its implementation.

Various studies documented on language learning utilising mobile learning, asserted that mobile learning offers tremendous potential benefits for older adults' language learning experience. Informal learning often associated with older adult learners as formalised learning is usually organised and confined within predetermined curriculum determined by experts (Gray, 1999). The researcher added how the traditional learning approaches that are suitable for young adults will not be appropriate for older adults. The University of the Third Age (UTA) was developed in the 1970s spreading global success with various structures and programmes for older adult learners. The first UTA though, was established in 1968 under the Direction of Higher Education in France (Formosa, 2010) with the main objective to establish interest and management in lifelong learning. Pierre Vellas initiated the first UTA establishment in Toulouse with the notion to improve retirees' quality of life. According to a study by Mohamed, Mohamed & Yusof (2010), elder population in Malaysia mostly spend their time in a day with napping (77.4 percent), relaxing (45 percent) housework (40.9 percent). Similar results were supported in a study as concluded by Hamid and Yahaya (2008), while a study by Yin-Fah, Paim, Masud & Hamid (2010) disclosed that older adults did not consider the prospect of new employment after retiring at 55 due to health issues and family responsibilities. Since then, UTA has expanded its branches around the world, including Malaysia. With available support for methodologies, together with tools (mobile technologies), older adult learning will be a diverse experience for self-actualisation.

The main objective of the current study is to examine the concept of mobile-assisted language learning among older adult learners in Malaysia by providing relevant literatures and theories within this particular area from the year 2008–2018. The following research questions guided this study:

1. How has the development of mobile learning concept contributed towards the use of MALL in language teaching and learning?
 - (a) How did mobile learning concept evolve in Malaysia?
 - (b) How smartphone applications are used in MALL studies?
2. What are the trends regarding older adult education?
 - (a) What are the defining characteristics of older adult?
 - (b) What are the strategies and policies available for older persons in Malaysia?
 - (c) What is the importance of lifelong learning and older adult education?
3. What are the theoretical frameworks commonly associated with MALL and older adults?

LITERATURE REVIEW

Mobile Learning Concept

Defining mobile learning (or m-learning) requires several considerations or criteria in learning as it may involve various terms and concepts that have yet to attain an agreed-upon definition (Kim & Kwon, 2012; Arvanitis, Krystalli & Panagiotidis, 2016). The criteria may either involve learning via mobile content, learning with mobile learners, or learning via mobile terminals (Taylor, 2006). Mobile learning (often regarded as “m-learning”) is not a new concept, however, the development and introduction of new devices in the market with enhanced capabilities have greatly ignited the interest level, including among language educators.

Mobile learning concept is considerably a new idea in Malaysia, however, a research team pioneered by Mohamed Amin Embi and Norazah Mohd Nordin of National University of Malaysia, has developed a significant research movement investigating mobile learning and its development in the country – “Mobile learning: Malaysian initiatives and research findings” were published as a collaborative effort between the University and the Ministry of Higher Education Malaysia (Embi & Nordin, 2013).

Where education and technology are concerned, then such definition from El-Hussein & Cronje (2010) fits the overall representation of the definition: “Any type of learning that takes place in learning environment and spaces that takes into account the mobility of technology, mobility of learners and mobility of learning” – (see Figure 1). In assuming the challenge to free formal instruction of being confined within a place and time, various technologies from clay tablets, scrolls and printed books were employed before the 20th century. Desktop computers, laptops and web-based applications meliorate with greater flexibility in offering access to language learning materials in the late 20th century. MALL application in education were possible today with the invention of hand-held devices, pioneered by various mobile technologies including pocket electronic dictionaries, personal digital assistants, MP3 players, ultra-portable table PCs and mobile phones (Burston, 2013).

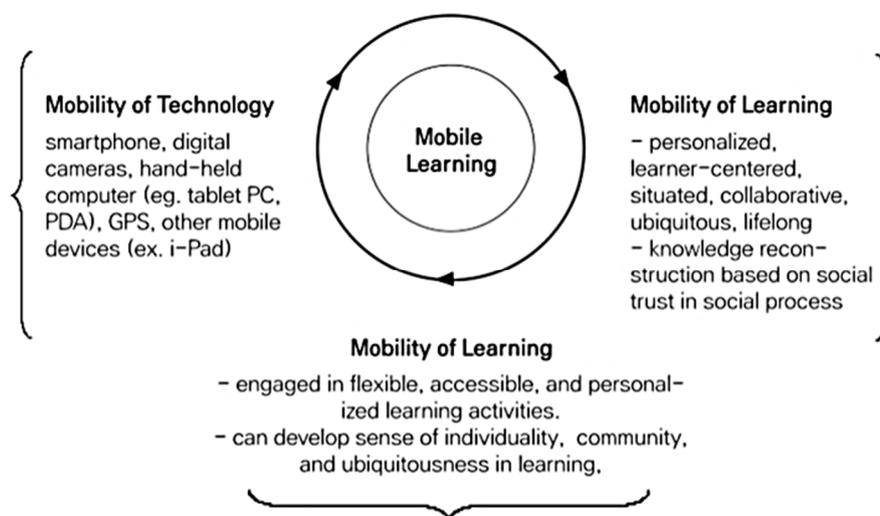


Figure 1: Concept of Mobile Learning in Three Areas (Adopted from Kim et al., 2012)

Apart from being an effective communication and entertainment instrument, mobile devices complement pedagogical structure in exposing learners with various communication situations and selected tasks to attaining target learning outcomes for a chosen language. Park and Slater (2014) asserted that features of mobile devices enable language learners to experience real-world opportunities in meaning making. These enable further educational benefits to be attained in mastering vocabulary and grammar know-how, communication skills, improved learning motivation and interest, as well as creating thinking skills (Burston, 2013).

FINDINGS AND DISCUSSION

Mobile-Assisted Language Learning (MALL)

Chinnery (2006) was the first researcher who coined the term MALL, which is a subset of mobile learning and computer-assisted language learning. A three-year empirical research on mobile language learning was undertaken by Stockwell (2010) concluded that learning with mobile phones is not highly desirable as compared to learning with computers due to the time learners took to work with the MALL-related activities. Kukulska-Hulme & Shield (2007) documented similar findings as Stockwell and concluded in their review that mobile devices are lacking in creativity as well as being repetitious. The researchers added that mobile devices does not capitalize on its characteristics by being mobile by allowing peer connectivity and advanced communication.

Major enhancements in software updates have allowed smartphones' capabilities to be fully utilized with the introduction of various language support for both iPhone and Android, respectively. Web apps development that enables interactivity were further encouraged by Apple and in 2008, the App Store was introduced as the new apps distributing environment. Android users own similar and perhaps have better options for distributing environment when Google introduced Play Store that has encouraged a significant gain in the number of apps and its users. A study conducted by Tang, Leung, Haddad, and McGrenere (2013) chose Android-based phone for their study experiment due to its popularity in the market (48%) among the first time buyers (57%). Various apps for language learning offer specific languages such as Spanish, Japanese, Chinese, and Arabic. Among the functions available offered by these apps include dual-language dictionary, flashcards, voice search and e-mail, audio recording and voice recognition (Godwin-Jones, 2011). Even though MALL began its inception in 1994 (Leow et al., 2014; Burston, 2013), the year 2009 was identified as the new beginning of MALL research area that are concerned with application development for language learning (Stockwell & Sotillo, 2011; Ballance, 2012).

Smartphone Applications for MALL

Arvanitis et al. (2016) sampled 20 software applications installed in smartphones and tablets for language learning for the authors' study. The applications under scrutiny were categorized under various foci, concentrating on activities such as lexical, grammatical, orthographic and phonological. Examples of these applications range from Duolingo (duolingo.com), Memrise (memrise.com), babble (babelcom) and more. The major languages applicable in the applications mentioned in the study mostly deal with European languages such as English, French, Spanish, German, Italian and Russian. While the least taught European languages range from Irish, Danish to Swedish. Chinese, Japanese and Korean were among the major Asian languages involved while Tagalog, Vietnamese, Thai and Arabic were available in five applications. The results of the findings suggest that most applications are well designed, allowing learners to develop basic language skills. Among the focus of the application were on minimal task-based (Park et al., 2014; Tang et al, 2013) activities for instance, matching, multiple choice and even crossword puzzle.

Initial educational setting experience using this service has been pioneered by many, among them including David Wolber from University of San Francisco who has taken the daunting step in implementing an app for his class using incomplete earliest version of the app (Wolber, Abelson & Friedman, 2015). The results indicated how the application became one of the motivating factors for the group of learners in higher education institution in pursuing the course. This serves as evidence that mobile assisted language learning can be implemented to complement traditional teaching or as the sole source for learning (Radin, 2017).

Theoretical Framework for MALL

MALL does not have a specific theoretical framework or applied theory in describing its application unless it is formulated for field-specific theory. Most theories connected to MALL in most reviewed literature originated from constructivism and situated learning theory. Activity Theory and Sociocultural Theory (Nah, White & Sussex, 2008; de Jong, Specht & Koper, 2010) was often associated with MALL by theorizing that human mind is mediated (Lantolf, 2000). The mediation factor was assisted by the application of tools in the process of meaning making. Research concerning MALL are found to be associating the mediated concept relating to collaborative learning (Chang, & Hsu, 2011; Lan, Sung, Chang, 2007), informal and formal learning context (Wong, Chin, Tan & Liu, 2010; Wong & Looi, 2010), self-paced learning (Oberg et al., 2012) and Situated Learning Theory (Hsieh, Chiu, Chen, Huang, 2010; Hwang & Chen, 2011), which are among the already established theories in learning (Viberg & Grönlund, 2012). Apart from that, most studies quoted employed theories or approaches derived from other areas. For instance, Cognitive Load Theory (Oberg & Daniels, 2012), Dual-Coding Theory (Huang, Huang, Huang, Lin, 2012) were derived from cognitive psychology, and Technology Acceptance Model (Cheng, Hwang, Wu, Shadiev & Xie, 2010) from informatics research. Some research introduces Mobile Learning Theory (Sharples, Taylor & Vavoula, 2007) in their studies, however, it portrays little difference compared with other technology-enhanced learning perspectives. The discussion on Mobile Learning Theory was extended in other literatures (Sandberg, Maris, De Geus, 2011; Peterson, Sell, Watts, 2011; Hsieh, Chiu, Chen, Huang, 2010). While some other research presented a theory that was somewhat related to their studies or experiment, but mostly possessed lack of connection between the discussion and theory presented. Most studies involving MALL applications are small-scale in nature, experimental and exploratory, and are carried out in a very short time (Viberg et al., 2012). Besides relating these theories with studies and experiment, some other studies included theories to investigate learner's perceived ease of use, intentions, and attitudes in relation to mobile technologies applicable for language learning. This exhibits efforts among the researchers in their attempt to invent a theory to distinguish MALL from other learning with technology theory. Leow, Yahaya, & Samsudin (2014) formulated Mobile Assisted Second Language Learning (MASLL) to improve oral communication in second language acquisition. The model was developed after the researchers identified various factors leading towards the phenomena involving formal classroom-based learning. These factors included teaching and learning time, learning environment, first language (L1) effects, and language complexity.

FRAME model by Koole (2009) is applicable for mobile learning with language learning. The model comprises three perspectives; device (mobile technologies), learner (human learning) and social (interaction) (see Figure 2). Koole commented that the model fit both formal and informal learning when all the three perspectives intersect.

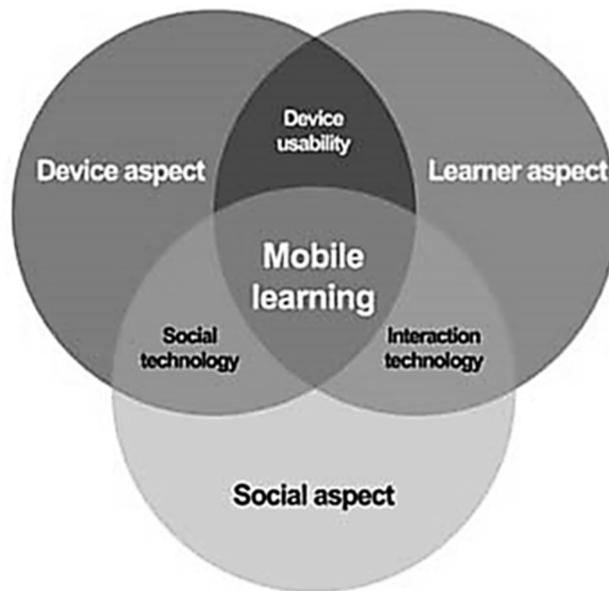


Figure 2: Koole's (2009) Framework for Rational Analysis of Mobile Education (FRAME)

Older Adult Learners

There were no studies indicating explicitly of the universally accepted or agreed upon definition of “older adults”, hence most studies defined older adults based on the population and samples applicable in their respective studies. For instance, a study by Guo (2017) selected 60 years old as the threshold for the study, and Kim, Gajos, Muller and Grosz (2016) selected 60 to 73 years old as their sample. However, in a study by Maderer et al. (2006), “older adults” refers to senior adults aged 50 years old and above. In various studies, the category for older adults is also known as third age (Laslett, 1989; Gómez, 2016) which indicate the period of time for personal fulfillment. Laslett (1989) indicated that the third age category comes from the four lifespan main phases, where first age shows a person’s dependency towards others (parents); the second age is where one arrives at adult maturity. Second age often refers to a stage where responsibilities and established social relationships were evident, alongside financial stability and having a family. Though the lifespan of the third age is rather subjective in nature, the fourth age usually refers to shorter span, and ultimately death. In addition to this, Hartford (1978) discussed geragogy as a field of study concerning the elderly based on their self-actualization, improved wellbeing, social relations, talent development and lifelong learning. Geragogy is also a well-known term that refers to the management of teaching and learning with older adults (Formosa, 2012; Maderer & Skiba, 2006). The term geragogy was first coined and advocated by Lebel (1978) in the author’s article titled, “Lifelong learning: The adult years”. Four years after, Yeo (1982) introduced “eldergogy” term with no educational theory that follows.

Informal Lifelong Learning for Older Adults

The introduction of the lifelong learning concept envisages preparing the old age community in sustaining their life after retirement. The concept of lifelong learning however, was part of the methodology in teaching adult learners practiced by Prophet Muhammad (Peace Be upon Him) (Bidin, Mansor, Manaf, 2014; Ministry of Education, 2012).

Dave and Cropley (1976) addressed lifelong education as “formal, non-formal and informal patterns of learning throughout the life cycle of an individual for the conscious and continuous enhancement of the quality of life, his own and that of society”. Lifelong learning (LLL) concept evolved in keeping *au courant* with the introduction of globalization and the new knowledge-based economy.

Various developed countries have their own interpretation of lifelong learning based on various criteria, including pedagogy, traditions, institutional infrastructure, welfare and governance (Green, 2006; Rahimah et al., 2016b). In Thailand and Vietnam, for instance, lifelong learning for older adult learners observes community learning initiatives and adult literacy (Dhirathiti, 2014). In France, U3A centres evolved and rebranded into Universities of All Ages or Universities of Leisure or Free Time with renewed focus on retraining and employment (Chamahian, 2010). Federal-funded vocational training programmes were the main focus in Germany, in addition to programmes offered by local and regional organizations (Rahimah et al., 2016b). China's U3A implementation primarily depends on its government support, which is very encouraging. The government of China targeted to have at least one U3A university in each of its city.

In Malaysia, however, lifelong learning among older adults is not a new concept since it has naturally been cultivated in the Asian culture. Formalized process of learning in our modern education system has excluded the adult and older adults learners until the early 21st century. Even though the older adults of post-war and pre-Independence were mostly excluded, the current generation of older adults however, is more affiliated with non-formal learning for leisure and religious avocations. Experiential learning in community settings has kept the older adult Malay adults accustomed with the tradition of religious learning in allowing them to fulfill the five pillars of Islam (Rahimah et al., 2016a; Muhammad & Meriam, 2000). 80% of the world's Muslim populations are non-native of the Arabic language, therefore, it is obligatory for Muslims to understand the language and improve their language pronunciation so as to not alter the meaning (Abdullah, Pathan, Al Shaikhli, 2017). In an attempt to extend learning for older adults beyond learning for leisure, Demonstrator Application Grant (DAGS) Scheme for NACSCOM, Malaysian Government Retirees Association, Eagle's Nest in Kajang, YMCA in Kuala Lumpur and Yayasan Nanyang Press were among the pioneering efforts in bridging digital divide (Friemel, 2016) among older adult Malaysians.

The University of Third Age (U3A) was established in 2007 by Institute of Gerontology, University of Putra Malaysia under the Ninth Malaysia Plan (2006-2010). Programmes offered under U3A in Malaysia developed in tandem with the French and British U3A models. Even though the programmes offered have no examinations and tests, the courses will be assessed only for appraisal purposes. U3A has become mainstream in ageing society worldwide, providing the venue to execute policies under lifelong learning initiatives, which later shifted the focus from economic to prioritizing social cohesion and capital (Boström & Schmidt-Hertha, 2017). Universities offering formal learning for older adults with innovative and creative solutions against the issues and challenges in ensuring a successful implementation of lifelong learning includes Open University Malaysia (OUM), Wawasan Open University (WOU), INFRA, KEMAS, Institute of Gerontology, community colleges and Malaysian Chinese Association (MCA) (Mohamed et al., 2010). The government postulated for the involvement of different segments of the populations in its economic development planning. The inclusive approach emphasized on capacity building, improved wellbeing through learning process and entrepreneurial attainments. This motivation being next in line of succession with Issue 4 of Priority Direction (Older Persons and Development) of the Madrid International Plan of Action on Ageing (MIPAA) by allowing knowledge, education and training to be accessible to older adults. Older adults learning experience with technology will not only bridge the gap in digital divide (Friemel, 2016), cultivate an active and fulfilling later life (Rahimah, Syamilah, Aizan & Tyng, 2016b), but also meaning-making in the learning process.

Theoretical Framework on Older Adult Learners

Kim et al. (2016) proposed a theoretical perspective extended from the technology acceptance model developed by Fred Davis in 1986 (see Figure 3). The provisional model demonstrated the perceived effort on new technology learning that eluded older adults' technology acceptance. The extended model introduced in 2016 has not since then been applied in any studies concerning older adults' learning experience and technology acceptance.

The initial application of the theoretical framework for older adults learning developed by Maderer et al. (2006) were mostly for institutional care. However, the framework can further be extended to mirror the dimensions of sense of purpose and engagement in learning (Maderer et al., 2006).

The critical geragogy theoretical framework may be considered in combining informal learning and professional practice in the older adult learning context. The framework was proposed by Maderer et al. (2006) in a study by Creech & Hallam (2015). Themes were organized under the main dimensions; person-centred, fellow-centred and matter-centred in facilitating older learners in community music. One of the themes under person-centred goals is vulnerability of older learners. Vulnerability refers to the older adult learners' new experience in learning presently, eventhough they may have vast experience in their respective professional lives. Connection to past experience may or may not exist and this may contribute towards the theme mentioned. Most informal learning are related with older adults' interests in specific area of study. This is described as a theme under fellow-centred goals, which measure enjoyment as a goal in learning. Interest plays an important role in learning for older adult learners as described in a study by Beh et al. (2016).

The trend continues where older adult learners stated their preferred mobile device in learning (Zainal, Razak & Ahmad, 2013; Barnard, Bradley, Hodgson & Lloyd, 2013). Older persons hold the higher adoption rate of mobile phones than the Internet usage as it meets their needs and expectations (Venkatesh, Morris, Davis & Davis, 2003; Conci et al., 2009).

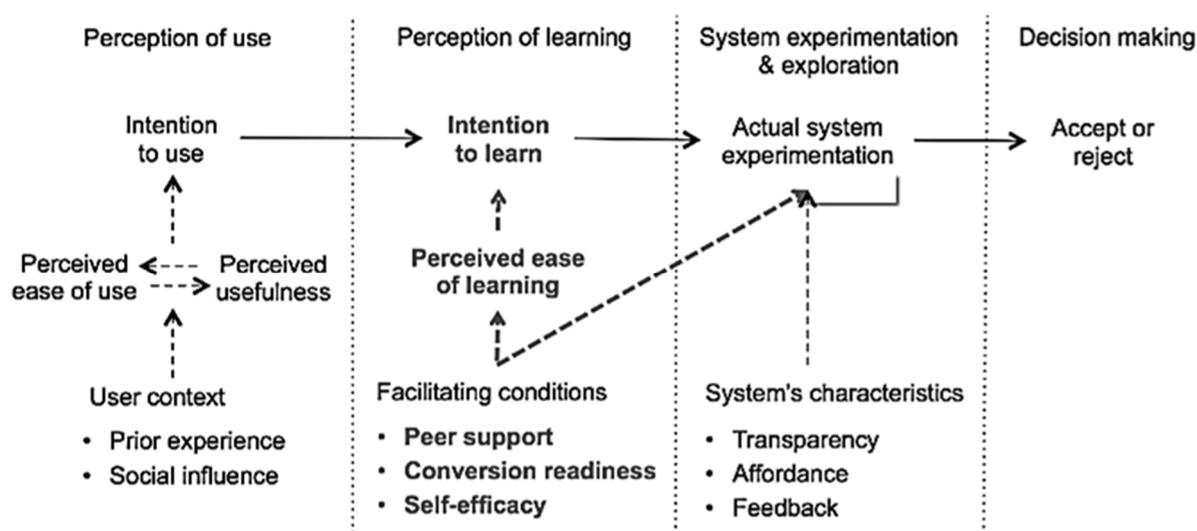


Figure 3: Technology Acceptance Model for Older Adults (Adopted from Kim et al., 2016)

In 2018, a study conducted by Malik, Azudin and Abdullah (2018) negated the previous studies by expressing that only small percentage of older people are using mobile devices, inclusive of mobile phones, while a study by Tang et al. (2013) added that comparatively, older adults are slower than the young adults at adopting mobile phone and its services. Bozdoğan (2015) concluded few points to consider in MALL implementation, considering factors affecting younger adult and adult learners in the researcher's study. It was observed that learning via mobile should be graded and monitored as part of a coursework, in order to achieve better participation and engagement in those tasks provided (Wang

& Smith, 2013). However, this may not necessarily be the case as the older adult learners on the other hand, are known to be highly motivated in learning the contents based on the interest-bridge model study by (Beh et al., 2016) and self-motivation and actualization (Rosales, Fernández-Ardèvol, 2016).

Table 1: Examples of Mobile Applications and Functionalities Applicable to Improve Components of Quality of Life (Adopted from Plaza et al., 2011)

QoL components identified by older people (Brown et al., 2004)	Needs of older persons in our review (Section 3.2, Table 2)	Examples of mobile functionalities or mobile applications	Notes: Status and Trends
Relationship/contact with others	Communication device	Communication functionalities: call, SMS, etc.	Their use can increase
Emotional well-being Independence/ mobility/autonomy	Feeling safe and secure	Person location, tracking services, tele-monitoring systems, alarm systems, etc.	Currently mobile applications play an important role
Religion/spirituality		Prayer books, religious calendars, healing videos, daily audio podcasts, news updates, holy books recitations, religious ringtones, etc.	Future line of research
Social/leisure activities	Enjoyment, self-actualization	Games, e-learning and training applications, etc.	Future line of research
Finances/Standard of living		Mobile applications to facilitate or support flexible work options and new job redesign strategies.	Future line of research
Own health, health of others	Healthier independent life	Medication reminder, dietary, home platforms, e-health systems, ambient assisted living projects, etc.	Mobile phone is used either as a stand-alone tool, or in combination with other technologies.

CONCLUSION

The aging society in Malaysia are growing rapidly (Rahimah et al., 2016), however, they do share age-related changes in terms of perception, cognitive abilities and mobility that greatly affect their daily routines. Though these changes among older adults are inevitable, technology designs that consider localization factor will reduce the barrier to adopt the mobile application. Non-English user interface were identified as one of the barriers to learning with mobile applications in Malaysia (Hisham & Edwards, 2007). Availability of numerous applications of mobile phones offers a promising tool to improve the older adults' quality of life (Plaza et al., 2011; Tang et al, 2013). However, there were lack of standard methods to evaluate the impact of mobile applications among older adults (Plaza et al., 2011). Lifelong learning concept render differing appreciation from various parties involving academicians, policy makers and older adults, themselves. While governments tend to relate this

concept with workforce retraining and skills upgrade, the academicians view this concept as a requisite criterion. Differing expectations by various sectors has led towards disagreement in conceptualizing lifelong learning for older adult learners in Malaysia. In a nutshell, as the name suggests, lifelong learning should be sustainable in nature, and therefore, mobilizing factors need to be considered in planning the activities' deliverables and content delivery (Rahimah et al., 2016b).

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MODELLING THE UNDERPINNING FACTORS OF WORD OF MOUTH (WOM) INTENTIONS OF STUDENTS IN AN ODL INSTITUTION

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ABSTRACT

The purpose of this research is to examine the impact of the predictors – quality of service, students perceived satisfaction, and university image on word of mouth (WOM) intention in an open distance learning (ODL) institution. Understanding the expectation of customers is an important component in the marketing kit. Competitive market among educational institution lead educational institutions to think of ways to improve the marketing strategy. The paper also investigates the mediating effect of university image and student perceived satisfaction on WOM intentions of students on the institution. Online survey questionnaires were distributed to 1012 students who are studying at an ODL institution. The sample is selected from the various learning centres and selection is based on the number of semesters these students have been studying at the institution. For the purpose of the research the sample are those who have completed six semesters of study at the institution. The items in the questionnaire were developed using existing constructs. The findings showed that student perceived satisfaction; quality services and university image have a positive and significant impact on word of mouth intention at $p \leq 0.05$. This study establishes the fact that the quality of services provided, the image of the university and how students feel about the services are predictors of word of mouth intention of students about the university.

Keywords: *Word of Mouth (WOM), University Image, Student's Perceived Satisfaction, Quality Service*

INTRODUCTION

Unlike other services, higher education services are long term and continuous where cognitive participation of students is essential, and the needs of the students are fulfilled by different service providers who require huge amounts of motivation and intellectual skills to attain their goals (Gruber et al., 2010). Continuous improvement of customers' (users) service is essential for successful development of the education business (Bolton et al., 2004; Kotler, 2000).

Competition has becoming intense in the higher education (HE) sector, in both public and private sector. Public comparisons between institutions in the form of various ranking tables are more widely available than ever before due to the emergence of global competition. Today, in the education service industry, how to make a good image on customers has become more and more important. When deciding to choose a university to study at customers usually makes a decision on the basis of the brand image and the reputation of the university. The image created by the students on the university will provide a potential long term benefit to the university. Thus, an examination of the brand image and services provided to students is appropriate to ensure and guarantee business stability and growing demand for the products and services (Fatt, 1997).

The concept of "life satisfaction" contains both a cognitive and an emotional evaluation of a person's life. Life satisfaction is appreciated as being "not just a desired attribute in itself, but an essential condition for psychological health" (apud. Sepehri Rad and Mahdian, 2014).

Student perceived satisfaction has been defined as "the perception of enjoyment and accomplishment in a learning environment" (Apud Khosravi et al., 2013) and it is correlated with optimism (Extremera and Collab., 2009), with academic performance, self-image (Chow, 2005), physical health and social relations (Darling et al., 2007). Life satisfaction is a concept to which students attach value, being one of the most important indicators of psychological health.

Assessing student perceived satisfaction levels helps higher education institutions identify those aspects that set them apart from others and, discover the areas that cause dissatisfaction, so as to provide improvements that can meet/exceed students' needs and expectations.

According to Druzdzal and Glymour (1995), the students' very decision of continuing their studies until graduation was considered to be a positive sign of their satisfaction for the university's services and the quality of what the university has to offer. Furthermore, Napoli and Wortman (1998) consider that self-esteem; life events during university years, social competence, psychological well-being, individual conscientiousness, social support, the university's academic, social and administrative systems will have a direct result in the students' increased level of satisfaction and maintained desire to complete their studies.

Furthermore, understanding and meeting student expectations can result in improved levels of student satisfaction (Kress 2006;) and student satisfaction can benefit in a number of ways. Satisfied students are less likely to drop out (Tinto, 1993); more likely to achieve higher grades (Bean and Bradley, 1986); engage in positive word-of-mouth and collaborate with the institution after they graduate (Alves and Raposo, 2009).

For educational institutions to be profitable and thrive, the brand image is essential. There is strong theoretical and empirical evidence which shows that loyal users not only make more frequent and higher value purchases, but are also more resistant to offers from competitors and more active in promoting a positive image of the institution (Alves & Raposo, 2010; Bolton, 1998; Dick & Basu, 1994; Rust et al., 1995). This last point is of particular importance in an open and distance learning institution like OUM due to the speed with which information travels in this extreme competitive era. In fact, regarding online services, user loyalty is a key aspect. Attracting new learners via the internet is an expensive business (Reichheld & Scheffer, 2000); furthermore, competitors are "only a click away," which makes it a challenge to gain student loyalty.

The higher education (HE) sector in Malaysia is getting more competitive with 323 private colleges, 26 private universities, 21 public universities, 29 university colleges and eight foreign branch campuses competing for the same pool of the local eligible students' population and regional students. Hence, HE must provide quality product or service, have a wide choice of product/service offerings, promote and maintain good service and enhance student satisfaction amongst its existing customers, aligned to their needs. This package should create an "irresistible" value proposition (Piercy, 2001).

Previously, the studies (Chow & Shi, 2014) showed that the perceived quality of teaching is the most decisive factor with regards to students' intention to enroll and willingness to continue their academic relationship with a specific university (Lovelock & Wirtz, 2004). However, instructional quality does not account for the majority of the influence; other factors do play an important role (Arguelles & Busquets, 2016).

LITERATURE REVIEW

Students as consumers are affected the most by the services provided in higher education; hence, they are the most important customers (Abili et al., 2011). According to Yunus et al. (2010), they are the primary customers for higher educational institutions, and their needs involve the acquisition of meaningful academic knowledge with quality services. Educational institutions have the responsibility to provide quality services and quality degree programs. The indicators often dominated in these studies are service quality, perceived satisfaction, emotional commitment, loyalty and trust. In most studies there exist relationships between these constructs which have been explicitly shown in the management and marketing literature (Caruana, 2002; Cronin and Taylor, 1992; Nguyen, 2009).

But what is customer satisfaction? Fornell (1992) defines customer satisfaction as a function of pre-purchase expectations and post purchase perceived performance (of the respective product/service), both of which are expected to have a positive effect. Customer satisfaction can be measured based on the comparison between perceived performance and customer expectations (Kotler and Keller, 2009). They describe customer satisfaction as a feeling of comfort or frustration, depending on whether the product or service operates better or worse than expected. Another definition reveals that it is the consumer's value judgment regarding pleasure derived from the utilization of level fulfilment (Oliver 1981). Similarly, Spreng and Singh (1993) defined "satisfaction as an emotional reaction to a product or service experience".

There are abundant literature on marketing research studies to determine the relationship between service quality and satisfaction, however the relationship is still indistinct (Anderson et al., 1994; Huili and Jing, 2012). Some researcher like Boulding et al. (1993) stated that both service quality and satisfaction can be treated as one and the same construct. However, in contrast, Taylor and Baker (1994) supported the view that service quality and customer satisfaction are two distinct constructs. Initial research studies attempted to determine the order of the relationship whether service quality leads to satisfaction or vice versa (Bolton and Drew 1991; Cronin and Taylor, 1992; Parasuraman et al., 1985, 1988). Cronin and Taylor (1992) supported the notion that perceived service quality, in fact, leads to satisfaction as proposed by Parasuraman et al., (1985, 1988), and, in their study, it is also evident that customer satisfaction and service quality have a significant effect on purchase intentions. Further, Bloemer and Ruyter (1998) and Huili and Jing (2012) found that service quality influences university image both directly and indirectly (through satisfaction).

Based on Shankar's research in 2003, the increase usage and availability of the internet has influenced customer satisfaction, reviews and recommendations differently. Szymanski and Hise (2000) argue that, given that more e-retailers promise their customers satisfying online experiences, it is important to understand the factors that drive customer satisfaction. Conversely, the use of the internet may affect negatively on customer satisfaction and loyalty compared with traditional systems (Shankar et al., 2003).

Even though there are many empirical studies in management and marketing verifying the relationship between service quality, satisfaction and loyalty, very few have been studied in the higher education institution (Peng and Samah, 2006; Tsuji et al., 2007; Yunus et al., 2010). Recently, studies related to the higher educational sector have included constructs such as corporate image, reputation, organisational image, intention, retention, word of mouth besides loyalty and satisfaction (Mosahab et al., 2010). These studies have established that core academic services including support and other peripheral services play an important role in student's satisfaction and loyalty.

Higher education (HE) institutions are focusing on understanding the factors that influence the number of new intake for each semester, as well as attempting to improve it. Recent research on student satisfaction has developed models for examining student satisfaction in the HE sector. The relationship between student learning outcomes and satisfaction has been assessed and attempts have been made to deconstruct the overall concept of student satisfaction (Gruber et al., 2010). Researchers such as Rowley (2003) and Tappet al. (2004) believe that higher educational institutions will benefit from developing relationships with their students, as this will provide a competitive edge.

Satisfied students may attract new students by engaging in positive word-of-mouth communication to inform friends and others, and they may return to the university to take other courses (Helgesen and Nettet, 2007; Marzo-Navarro et al., 2005). Students' satisfaction can affect word of mouth intention of students to talk about the good services and other good things of the university.

Hence, to establish a good and long term relationship with students, HEs need to know that student satisfaction through the various elements of teaching and non-teaching is important for student performance (Walther, 2000). Student satisfaction consequently has an effect on retention and potential student intake (Alves and Raposo, 2007).

Carter and May Yeo (2015) noted that:

HE should consider concentrating on defending its current position via retaining its existing students through the provision of an excellent "academic experience" and in so doing, would appear to go a long way to guaranteeing its future income and student numbers. From the results of this study, focusing on the "core" of a HE business, that is, the "academic experience" appears to be the main issue. This means that programme syllabi, content and courses structures must be clear, relevant, contemporary, and according to research findings, challenging to students. HEs may need to give maximum academic support via advice on course offerings and study schedules.

It suggests that teaching and non-teaching elements need to be combined and turned into reality via the provision of sound academic (course pedagogy, structure and content and quality faculty, etc.) provision and non-teaching support (adequate IT facilities, and social facilities, etc.). In addition, they need to be incorporated into marketing programmes and promotional literature so that all physical and non-physical support are equally given prominence and communicated via internal and external communications to both current and potential students.

Elliot and Healy (2001) argue that student satisfaction is a short-term attitude based on an evaluation of their experience with the education service supplied. Elliot and Shin (2002) note that focusing on student satisfaction enables universities to re-engineer their organizations to adapt to students' needs and, at the same time, create a system that allows continuous monitoring of the effectiveness of meeting or exceeding their needs. They further indicate that student satisfaction provides an avenue through which a competitive advantage could be achieved in HE institutions.

Quality of Service

Service Quality is commonly noted as a critical prerequisite for establishing and sustaining satisfying relationship with valued customers. In this way, the association between service quality and customer satisfaction has emerged as a topic of significant and strategic concern (Cronin and Taylor, 1992). The finding by Hassan et. Al (2008) corresponds with Danielson (1998) found that when students expressed satisfaction with their HE experiences, these situations seem to be centered on involvement and contact with people. By sharing the same fundamental nature, it confirmed that empathy plays a crucial and an influential role toward satisfaction.

Kajenthiran and Karunanithy (2015) noted that service quality in the private higher education institutions is positively associated with student satisfaction. It was also found that student satisfaction among the HE is significantly influenced by the service quality. In a supportive way, Usman (2010) approached the study by using structural equation modeling technique (SEM) on *The Impact of Service Quality on Students' Satisfaction in Higher Education Institutes of Punjab in Pakistan*. The result has revealed that, service quality has a significant impact on the students' satisfactory level.

The study by Martinez-Arguelles, Busquets, 2016 found that the perceived quality of the administrative services, the additional services can have a comparatively higher impact on student satisfaction than the other services. This demonstrates the importance of student perceptions of service quality (PSQ) of a HE as it is a key element in both loyalty and willingness to recommend. The relationship established in the literature (for instance, Spreng, MacKenzie, & Olshavsky, 1996) between the constructs of service quality, satisfaction, loyalty, and willingness to recommend the service in an offline environment can also be seen in the context of virtual higher education.

Therefore, it is worth noting and appreciative effort and the concern provided by the university to its students, both personally and academically, to understand and answer their needs and expectations. This leads to establishing an efficient relationship between the university and the students, to increasing their level of satisfaction towards the university environment, which ensures academic success and a fulfilled happy life (Pescaru, 2017).

A holistic view of service quality does not focus exclusively on an assessment of teaching and learning processes. Additionally, it has taken into account: (a) administrative services, concerning the administrative processes which, as Grönroos (1990) stated it is vital to provide the core service: the teaching; (b) The complementary or additional services – such as the job bank and the library; and (c) the virtual learning environment or user interface, which Zeithaml & Parasuraman (2004) and Parasuraman et al. (2005) describe as reliability or system availability. The four dimensions are found to significantly affect student perception of service quality, with the one concerning the teaching being the most relevant, from an individual point of view. Furthermore, all have a significant influence on student satisfaction, with the administrative services having a higher relative importance. It is very important to note that considered as a whole, non-instructional services (administrative services, additional services, and user interface) have a higher impact on students' PSQ and satisfaction than teaching or core services. Therefore, the management of these non-instructional aspects is indispensable to ensure loyalty and willingness of students to recommend.

Gruber et.al (2010) noted that students' satisfaction with the university is based on relatively stable person-environment relationship through service oriented and treating students more as a customer. According to Thomas (2011) on the other hand, the most important aspect of student satisfaction is seen to be the teaching quality and the role of the teaching staff in driving student loyalty.

Student Perceived Satisfaction, University Image and Word of Mouth

In this study, student satisfaction and university image act as intervening variables that mediated increase of WOM by students in the institution. University Image is a collective representation of students perception after experiencing the product and services they have received. According to Sevier (1994), is defined as a set of attitudes and beliefs that a person holds about the education they obtained at the institution.

Administrative quality and physical facilities have a significant effect onto student loyalty through the mediation of student satisfaction, noted by Ali & Ahmed (2018). Students are very sensitive in resolving their queries in time and want to be treated with care and respect.

Establishing satisfaction early on should lead to a greater likelihood of the intention to talk positively about the institution (Rowley, 2003). Tinto (2006) formulated a student integration theory of persistence or retention based on the relationships between students and institutions. He argued that retention involves two commitments on the part of the student. The first commitment is the goal commitment to obtain a college degree, and the second is the decision to obtain that degree at a particular institution (institutional commitment).

Onditi and Wechuli (2017) concluded that Quality Service in higher is a multi – dimensional construct and there is no consensus among authors on the dimensions or the best model that should be used evaluate service quality in institutions of higher learning (Chen 2016) noted that Service quality has been found to be an important input to student satisfaction. The service quality is a key antecedent to students' satisfaction. The best services satisfy students and, in turn, make students want to talk to the institution. Hence, the results of this study help institutions to understand the importance of quality in services and the relationship between students' perceived quality of service, satisfaction which leads to decision to promote the institution.

Effective evaluation of service quality and student satisfaction in higher education institutions should include both academic and non-academic dimensions that students are exposed to when studying at an institution and these include; teaching and administrative staff competence, staff reliability and responsiveness, staff empathy and assurance, delivery styles used by tutors and lecturers and institution facilities such as libraries, computer laboratories and hostels for institutions that provide boarding facilities for their students. Another important dimension in higher education service quality is the support services especially in the area of counseling and student health in case a student requires medical attention while still at the institution's premises.

The dimensions of SERVQUAL (Parasuraman et al. 1988) reliability, tangibles, reliability, assurance, empathy and responsiveness were employed in this study. However, assurance contains communication, credibility, security, competence and empathy contains understanding and access (Carman, 1990). In the model;

- Reliability is the ability to perform promised service dependably and accurately
- Assurance refers to employees' knowledge and courtesy
- Tangibles refer to personnel's appearance, physical facilities and equipment
- Empathy refers to care and individual attention given to customers
- Responsiveness refers to help customers and provide service willingness

This research will focus substantially on the antecedents of WOM by the students on the institution. WOM intention is derived from behavioral intention which can be characterised as person-to-person communication regarding a brand, a product or a service. WOM represents the client's willingness to recommend and give explanation about the service he received

With regards to the relationship between quality and satisfaction, it is worth emphasizing that, in contrast with what other studies suggest (Dabholkar& Thorpe, 1994), perceived quality of service is shown to have a direct impact on willingness to recommend and not only an indirect influence, or mediated, through the level of satisfaction. In light of these correlations, the quality of service perceived by itself is a key aspect in improving and their desire to promote the course in a specific HE.

Align with the literature, the model for this research is proposed as shown in Figure 1. In this research, the quality of services was adapted from the five dimensional SERQUAL. The quality of service was hypothesized to have a direct effect on university image and word of mouth intentions and indirect effect through student perceived satisfaction on word of mouth intentions. Student perceived satisfaction was hypothesized to have direct effects on university image and word of mouth intentions. In addition, Student perceived satisfaction was also hypothesized to have an indirect effect on word of mouth intentions through university image.

Representation of Research Hypotheses:

- H1: Quality Service is significantly and positively related to University Image.
- H2: Quality Service is significantly and positively related to WOM Intentions.
- H3: Student Perceived Satisfaction is significantly and positively related to University Image.
- H4: Student Perceived Satisfaction is significantly and positively related to WOM Intentions.
- H5: University Image is significantly and positively related to WOM Intentions.
- H6: University Image mediates the relationship between Quality Service and WOM Intentions.
- H7: University Image mediates the relationship between Student Perceived Satisfaction and WOM Intentions.

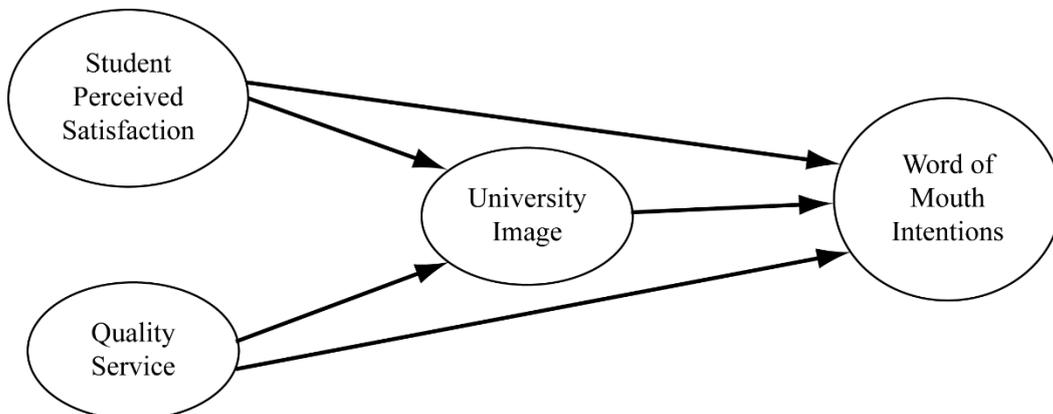


Figure 1: Research Model

RESEARCH METHOD

The research was conducted by employing the quantitative research design using online survey questionnaires. The sample were 1012 students who have studied more than six semesters at this institution which means that at the time of their participation in this research they are in their third year of study. First and second year students were not included in our sample due to their lack of experience on the services provided by the university, thus making them unsure to evaluate the student satisfaction scale. The students were selected using systematic random sampling based on the list provided by the Admission and Records Unit. An alert system was used to ensure that the students answered the questionnaire. The students were given a cut-off date of 10 working days to give their responses via online. The 22 item research questionnaire was developed using the Survey Monkey software based on the constructs identified from literature search. In the beginning there were 13 items for Quality Service, 3 items for Student Perceived Satisfaction, 3 items for University Image and 3 items for Word of Mouth. The options for the responses were designed using a 7-point Likert response scale from Strongly Disagree to Strongly Agree. Data were analysed using IBM SPSS Version 25 and AMOS Version 24.

FINDINGS AND DISCUSSION

This analysis contains two parts analysis; validity and reliability measurement and latent variable relationships to test the hypotheses.

As the data indicates, the bigger group of respondents are female students (62%) and 49.6% of the respondents are between the age of 31–45 years old. Majority of the respondents are in their Third Year (50.9%).

Table 1: Demographic Data

Gender:	
Males	385 (38%)
Females	627(62%)
Age Groups	
Less or equal to 30 years old	426 (42.1%)
31 to 45 years	502 (49.6%)
more or equal to 46 years	84 (8,3%)
Year of Study:	515 (50.9%)
Year 3	
Year 4	326 (32.2%)
Year 5	171 (16.9%)
Level of Study:	139 (13.7%)
Diploma	
Degree	873 (86.3%)

Reliability of the Scales

The Quality Service subscale consisted of 13 items ($\alpha = 0.968$), the Student Perceived Satisfaction subscale consisted of 3 items ($\alpha = 0.817$), the University Image subscale consisted of 3 items ($\alpha = 0.866$) and the Word of Mouth Intention subscale consisted of 3 items ($\alpha = 0.947$).

The Word of Mouth inventory was found to be highly reliable (25 items; $\alpha = .968$).

Table 2: Average Variance Extracted (AVE) and Composite Reliability (CR)

Construct	Items	Standardised Estimates	AVE	Cronbach's Alpha	CR
Quality of Service	QS1-punctuality	0.716	0.60	0.968	0.95
	QS2-presence	0.763			
	QS3- attention to details	0.593			
	QS4-provide services as promised	0.776			
	QS5-good advice	0.823			
	QS6-immediate response on telephone calls	0.676			
	QS7-conducive	0.853			
	QS8-equipped classrooms	0.816			
	QS9- helpful	0.693			
	QS10-caring	0.800			
	QS11-convenient operating hours	0.851			
	QS12-knowledgeable	0.838			
	QS13-courteous	0.850			
Student Perceived Satisfaction	SPS1-services at LC	0.605	0.69	0.817	0.73
	SPS2-good relationship	0.798			
	SPS3-pursue another degree at OUM	0.653			
University Image	UI1- staff's integrity	0.573	0.72	0.866	0.77
	UI2-give the best education	0.798			
	UI3-respected University	0.787			
Word of Mouth	WOM1-say positive things about OUM	0.820	0.85	0.947	0.88
	WOM2-encourage friends and relatives to study at OUM	0.865			
	WOM3-recommend OUM to someone who needs advise to further studies	0.851			

Construct validity is examined through convergent validity and discriminant validity (Bagozzi and Edwards 1998). Convergent validity is established through the factor loadings, average variance extracted (AVE) and composite reliability (CR). The factor loadings and the AVE have values above the threshold criterion of 0.5 (Hair et al.2015) and the CR values are all above the threshold value of 0.7 (Carmines and Zeller 1998). The results show that the convergent validity of the chosen constructs is established.

Discriminant validity can be examined by comparing the inter-correlations of the construct to the square root of the average variance extracted. Table 3 shows the values of square root of the AVE are all greater than the inter construct correlations. Therefore, the discriminant validity has been established. Table 2 shows the results of the assessment of the internal consistency and reliability of each factor. All the constructs gave the recommended cut-off value for Cronbach alpha of 0.7 (Nunnally and Bernstein 1994). The model fit indices in Figure 1 shows that the data fits the model moderately well.

Table 3: Discriminant Validity Results

	QS	SPS	UI	WOM
QS	0.77*			
SPS	0.679	0.83*		
UI	0.700	0.802	0.85*	
WOM	0.517	0.705	0.740	0.92*

* Square roots of AVE are shown on the diagonal.

Structural Model

The proposed research model (Figure 1) and hypotheses were tested by using structural equation modelling (SEM). The structural model-fit statistics are shown in Table 5, reveal that the structural model reasonably fits the data well ($\chi^2 = 904$, $df = 216$, $p = 0.000$, $GFI = 0.864$, $CFI = 0.94$, and $RMSEA = 0.080$). The absolute fit measures indicated an acceptable level of fit for the structural model (Hair et al., 1998).

After establishing the structural research model fitted data well, the results of the standardized estimates of the direct, indirect and total effects the respective hypotheses test taking $p < 0.05$ are shown in Table 4. The standardized estimates are shown in the path diagram in Figure 3.

The tests of hypotheses H1-H7 disclose several interesting findings. The confirmation of hypothesis H1 ($r = 0.238$) reveals a significant and positive relationship between quality service and university image. Likewise, the confirmation of hypothesis H2 ($r = 0.267$) reveals a significant and positive relationship between quality service and WOM intentions. Further the confirmation of hypothesis H3 ($r = 0.593$) reveals a significant and positive relationship between student perceived satisfaction and WOM Intentions. The hypotheses H4 ($r = 0.226$) reveals a significant and positive relationship between student perceived satisfaction and WOM Intentions. The hypotheses H5 ($r = 0.650$) reveals a significant and positive relationship between university image and WOM Intentions, in addition the results of Hypotheses H6 and H7 are also shown in Table 5.

From the existing literature it was already assumed that university image has a significant impact on WOM (the results of the study also confirm the relationship between image and WOM). The results of H6 and H7 prove that university image acts as a mediating variable for WOM and so it can be said that when our students have experienced the services provided and feel satisfied, they are likely to carry out more WOM recommendations for the institution.

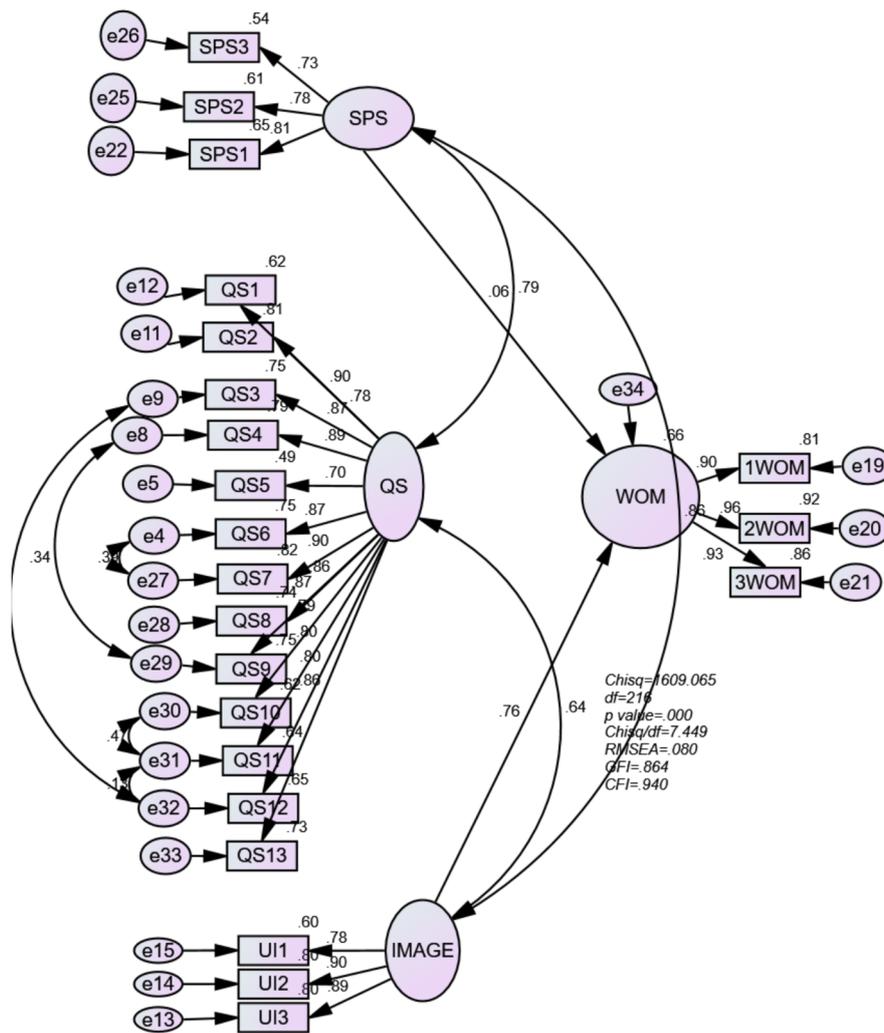


Figure 2: Structural Model

Table 4: Results of the Standardized Estimates for the Research Hypotheses

Hypothesis	Association	Direct Effect	Indirect Effect	Total Effect	p-value	Supported
H1	University Image< ----Quality Service	0.238	–	0.238	***	Yes
H2	WOM Intentions< ---Quality Service	0.267	–	0.267	***	Yes
H3	University Image< ---Student Perceived Satisfaction	0.593	–	0.593	***	Yes
H4	WOM Intentions< ----Student Perceived Satisfaction	0.226	–	0.226	***	Yes
H5	WOM Intentions< ----University Image	0.650	–	0.650	***	Yes
H6	WOM Intentions and Quality Service <----University Image	–	0.155	0.42	***	Yes
H7	WOM Intentions and Student Perceived Satisfaction <----University Image	–	0.386	0.61	***	Yes

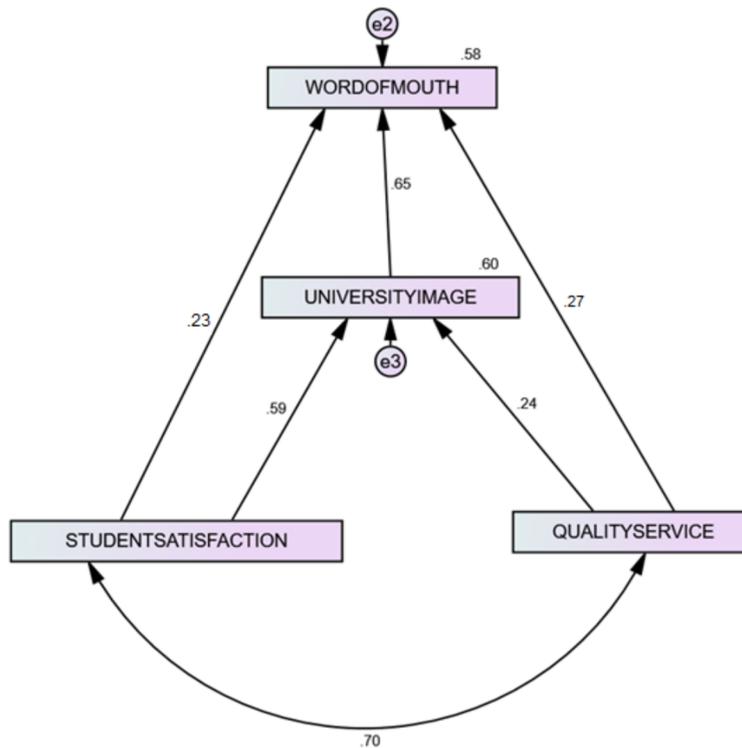


Figure 3: Path diagram of the standardized estimates of the antecedents and Mediator of WOM Intentions

CONCLUSION

While this study makes several contributions to the literature of WOM intentions. There are several limitations of the study. This focus of this study is only on two antecedents and one mediator on WOM intentions. The WOM behavior of university students may be influenced by several other antecedents and mediators which are not included in the research. The responses of this study mainly are from third, fourth and fifth year students who are still in the system. It is quite possible that the responses will be different if data were collected from students who have just graduated from the institution. Similarly, a comparative analysis of customers belonging to different geographical areas with regard to their willingness to engage in WOM recommendations can also be studied. Also, only person-to-person WOM recommendations have been considered in the current study. Future studies can investigate the factors that impact electronic WOM or e-WOM among bank customers.

These results offer valuable insights for the management of higher education institutions. Basically, we can draw out three alternative strategic approaches to increasing the level of WOM: Quality Service, Student Perceived Satisfaction and University Image.

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MODERATING EFFECT OF GOAL ORIENTATION ON THE RELATIONSHIP BETWEEN ACADEMIC SELF-EFFICACY, LEARNER CHARACTERISTICS AND LEARNING ACHIEVEMENT IN AN OPEN DISTANCE LEARNING (ODL) BASED HIGHER EDUCATION INSTITUTION

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ABSTRACT

This study focuses on factors influencing learning achievement in an Open-Distance-Learning environment of a higher education institution. This study explores the relationship between academic self-efficacy and individual learner characteristics on learning achievement (learning transfer, generalisation, and maintenance). Moreover, this study investigates the role of learner goal orientation. The objectives of the study are, first, to investigate a proposed model to represent theoretical relationship between academic self-efficacy, learner characteristics and learning achievement. Secondly, to confirm learner goal orientation moderates the relationship between learner self-efficacy and training effectiveness. The measures employed in the study are adopted from past studies; goal orientation, self-efficacy and learning achievement using a five-point Likert scale. The study utilised purposive sampling. Respondents are postgraduate students from Open University Malaysia (OUM). Analysis was done by using SmartPLS. Findings indicate that hypothesis were supported.

Keywords: *Learning achievement, Academic Self-efficacy, Learner Characteristics, Learner Goal Orientation*

INTRODUCTION

Due to rapidly changing working landscape, and increasing demand for flexible learning arrangements, higher education institutions have shifted to an open distance learning (ODL) environment (Nguyen, 2015). ODL setting enables the students to learn at their own pace and time, without having to be physically present in the traditional classroom setting (Butcher & Rose-Adams, 2015; Kauffman, 2015; Goolamaly, Yusoff, Subramaniam & Latif, 2010). However, research demonstrates because face-to-face interaction is greatly reduced in an ODL setting, a different learning approach focus is with the individual learner (Botha & Coetzee, 2016). The literature on learning achievement in the context of ODL demonstrates that individual characteristics, and academic self-efficacy play a major role in learning achievement. However, the review of the literature by Honicke and Broadbent (2016) has suggested further assessment of the moderating/mediating effect on the relationship, especially of goal orientation, as the current literature reported mixed findings.

Problem Statement & Research Questions

Previous studies on the factors that effects learning effectiveness were mostly conducted in Europe and Northern America. There are a handful of articles from Turkey, Australia, Bangladesh, Egypt, United Arab Emirates, Iran, Nigeria, Philippines, and Taiwan (see Honicke & Broadbent, 2016; Richardson, Bond & Abraham, 2012). However, there is a lack of recent studies that investigate the learning achievement in the context of ODL in Malaysia. Moreover, Honicke and Broadbent (2016) performed a review of the literature on the influence of academic self-efficacy on academic performance literature and found that there exist a possible moderating and/or mediating effect on the relationship. However, they highlighted inconsistencies in the literature as to academic self-efficacy or goal orientation acts as the mediating variable on academic performance. As such, this study intends to explore a framework for an effective ODL learning environment, thus the following questions are posed:

1. Does academic self-efficacy and individual learner characteristics influence learning achievement in an ODL environment in Malaysia?
2. Do different levels of learner self-efficacy have a significant impact on learning achievement, in an ODL environment?
3. Does learner goal orientation moderate or mediates the relationship between academic self-efficacy, learner characteristics and learning achievement, in an ODL environment?

Objective of the Study

In this study, the above questions are answered by integrating individual and contextual components in a conceptual framework. The guiding objective is to expand knowledge on factors affecting learning achievement. The research model comprises of four key factors; academic self-efficacy, individual learner characteristics, goal-orientation and learning achievement. Specifically, this study seeks to address the research gaps in the ODL teaching and learning literature. In this study, a replication of previous research but also respond to research calls by testing the relationships between individual academic self-efficacy, individual learner characteristics, and learner achievement, especially on the possible mediating or moderating influence of learner goal orientation. Thus, this study is to empirically validate a proposed model representing theoretical relationships between academic self-efficacy, individual learner characteristics, learners goal orientation and learning achievement.

Literature Review

Open Distance Learning (ODL) is a term used to describe technology-aided learning whereby learning is done at a distance, i.e. learners and the teachers does not necessarily share the same physical location (Botha & Coetzee, 2016). ODL can exist in a purely online format or a combination of online and traditional face-to-face known as blended or hybrid format. Both online learning and hybrid are considered as open distance learning, as literature compares these two formats against traditional face-to-face classroom, format of teaching and learning.

Learning Effectiveness

Reviews of literature on ODL are abundant with studies that examine the effectiveness of online learning. A large number of studies have found significant and positive effect of ODL on student's learning outcomes. Some of the findings are improved learning, improved engagement and improved perception of learning of the online format (Nguyen, (2015).

In a hybrid learning method, findings indicate students had obtained better learning outcomes with improved perceptions of learning (Feeley & Parris, 2012) by using a pedagogical tool known as PeerWise that enables the students to write, discuss and share multiple choice questions among themselves while receiving minimal to no feedback from teachers. Denny (2013) conducted a study to improve effectiveness of the PeerWise tool. One study emphasizing methodology on the effectiveness of online learning in comparison to traditional learning format was conducted by Bowen (2013). Bowen (2013) examined students randomly assigned to a control group (that uses the traditional learning format) and another group exposed to hybrid interactive online learning. Findings indicated comparable learning outcomes for both groups. Nonetheless, it is postulated a promise of cost savings and productivity gains for the hybrid format.

Learner's Characteristics and Learning Achievement

Several studies investigated learner characteristics contributing to ODL performance outcomes. Botha and Coetzee (2016) findings indicate that male respondents reported significantly higher academic success orientation than female learners. This is similar to findings by Huang (2013) which showed that male students from North America and Europe possess better developed academic self-efficacy compared to female counterparts. Findings were congruent with Vieira and Grantham (2011) study examining Internet self-efficacy of college students' showing males having a higher degree of Internet self-efficacy compared to females. Other findings were students with high Internet self-efficacy outperformed their counterparts and reported higher confidence level in their ability to complete an online course. Another study done in South Africa examines academic self-efficacy of students found male respondents reporting a higher level of self-efficacy (Mackay & Parkinson, 2008). Wood & Bandura (1989) confirms on written performance between students, the two genders were found to have statistically significant differences.

Learner's Academic Self-Efficacy and Learning Achievement

Academic self-efficacy is defined as learner's judgement about his/her ability to successfully achieve academic goals (Elias & Mac Donald, 2007). Self-efficacy is frequently described in terms of academic self-efficacy, as learner judgement on ability to successfully attain educational goals (Elias & MacDonald, 2007). Academic self-efficacy is the construct frequently used in an academic setting, whereas self-efficacy is the major component of the self-influence factors in Bandura's (1977) Social Cognitive Theory.

Researchers have suggested Social Cognitive Theory as the foremost theory utilised in explaining the process that regulates behaviour (Honicke & Broadbent, 2016). The theory hypothesized a combination of external and internal factors regulate an individual's behaviour (Bandura, 2012), and self-efficacy to be the most prominent influence on behaviour. Bandura (1997) defines self-efficacy as an individual's judgement of his/her capabilities to organise and execute actions required to attain desired outcomes.

Much literature indicates many studies that indicate the importance of academic self-efficacy on learning achievement. Moreover, a meta-analysis study done by Richardson, Bond & Abraham (2012) showed that academic self-efficacy had significant heterogeneity in effect size. This was also reported across studies by Richardson et al., (2012), proposing further investigation of factors that mediate the relationship between academic self-efficacy and learning achievement, to uncover moderator variables may account for this range of variability.

ODL-based learning environment requires learners are comfortable with using technology. Those students who have high computer literacy would be able to perform better than those who do not. Computer literacy can be defined as the belief that one has the ability to operate computers that are affected by motivation and behaviour (Bandura, 2006). Expertise in using computer applications are believed to affect the success of learning in distance learning methods, because all devices in distance learning are related to information technology. As such, students with higher online self-efficacy would perform better than those with lower score. For example, adult learners enrolled for undergraduate studies in an ODL university in South Africa indicate male learners scored significantly higher on online success orientation, were more likely to engage in online academic activities and make use of online learning resources (Botha & Coetzee, (2016). Such findings are congruent with Vieira Jr, & Grantham (2011) study on Internet self-efficacy of college students that males had a higher degree of Internet self-efficacy than females. Findings also indicate students with high Internet self-efficacy outperformed their counterparts whilst reporting higher confidence to complete an online course. This suggest due to higher self-efficacy, male learners are more willing to take on challenging tasks, although, female students set more difficult goals than male respondents (Vieira Jr, & Grantham, 2011). Similar findings done by Huang (2013) surveyed North American and European students found that female students have less developed academic self-efficacy than males. Mackay & Parkinson (2008) also found female students possess lower levels of self-efficacy.

Learner's Goal Orientation and Learning Achievement

Several studies examined the influence of learner goal orientation on the relationship between academic self-efficacy and learning achievement. Learner goal orientation refers to learner's aims for learning and performance outcomes established at the start of the online program (Littlejohn, Hood, Milligan & Mustain, 2016). There are four categories of goals: general learning and development; specific know-how; achieve certification; and completion of all assignments. The term goal orientation refers to a mental framework on how individuals respond to and interpret achievement situations Brett & VandeWalle (1999). The core proposition of Dweck and Leggett (1988) theory is that goal orientation influences cognitive and behavioural patterns in achievement setting.

Phan (2010) posits academic self-efficacy positively influences learner choice of type of goal orientation in order to achieve academic success. In this situation, if learner adopts a mastery goal due to the influence of his academic self-efficacy, the learner reports better academic results. This study lacks mediators but argues existence of the possibility of bi-directional relationship between two motivational variables, i.e. academic self-efficacy and effort regulation influence each other and learner achievement through a regulatory feedback loop. Hsieh et al., (2012) tested the mediating effect between academic self-efficacy and learning achievement found there is a mediating effect. Earlier studies found that academic self-efficacy acts as a mediator between learner goal orientation and learning achievement (Crippen et al., 2009; Neuma, 2008). Therefore, there are inconsistencies in the current literature as the construct of academic self-efficacy or learner goal orientation plays the role of a mediating variable.

Conceptual Framework

The conceptual framework for this study, as shown in Figure 1 below examines the influence of academic self-efficacy, learner characteristics and learning achievement. The study integrates learner's goal orientation as the moderating variable on the relationship. Academic self-efficacy literature recognizes that the construct predicts learning achievement. Individual characteristics are recognized as having direct and indirect effects on learner's goal orientation and learning outcomes. However, literature reveals mixed results on the role of learner goal orientation with some studies showing that learner goal orientation has a moderating effect.

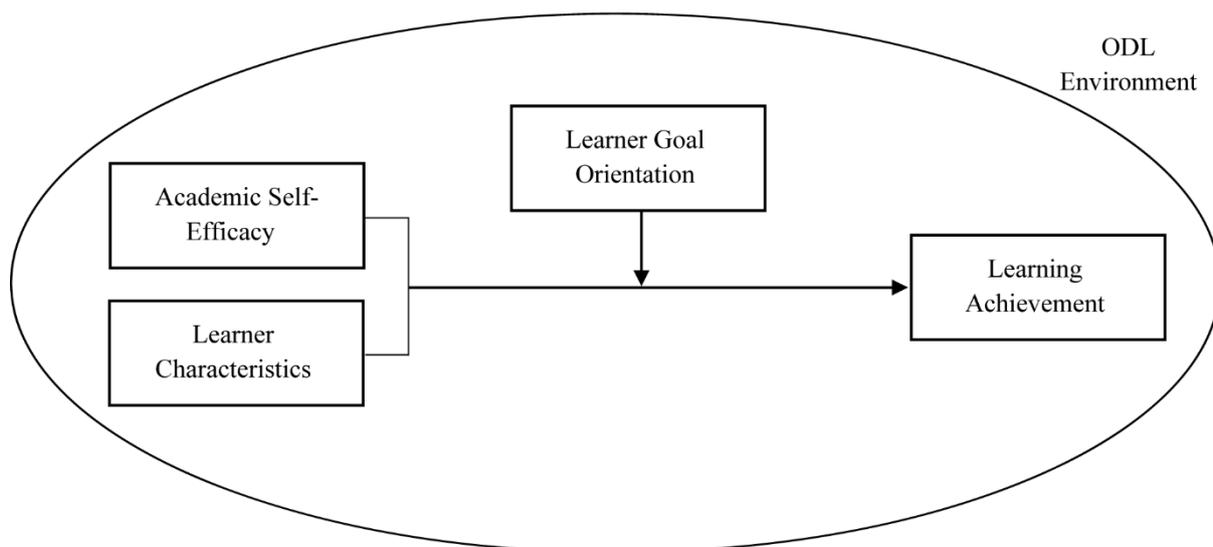


Figure 1: Conceptual Framework

Based on the above conceptual framework, the following hypotheses are forwarded:

- H1: Academic self-efficacy has a positive and significant influence on learning achievement.
- H2: Learner's characteristics has a positive and significant influence on learning achievement.
- H3: Learner's goal orientation has a moderating influence on learning achievement.

METHODOLOGY

Sample

Purposive sampling was utilized. Data was collected from post-graduate students at Open University Malaysia (OUM) Kuala Lumpur branch. Students enrolled are part-time students. PG programs offered at OUM are from business and management, applied sciences, educational and social sciences. A sample size of 150 university students responded to the survey questionnaire. 123 or 82% of the participants involved in this study were eligible. However, usable questionnaires were 107. Therefore, response rate is adequate for analyzing with SmartPLS.

Survey Instrument & Data Collection

Data collection was done by researchers themselves as this provided an opportunity to clarify misunderstanding of the items. Questionnaires were also distributed through lecturers and these assigned lecturers were briefed beforehand. Questionnaire had items related to learner characteristics, self-efficacy and goal orientation. Learners' characteristics had 5 items, learner's goal orientation had 4 items, and learner's self-efficacy had 5 items. Learning achievement had 6 items (see Figure 1) with a 5-point Likert scale of 1-strongly agree, 2-agree, 3-neutral, 4-disagree and 5-strongly disagree.

DATA ANALYSIS & FINDINGS

Data Analysis and Results

Partial least square (PLS) was used. Gudergan, Devinney and Ellis (2003) suggested PLS to analyse cause and effect relationship in business research. Furthermore, PLS can be applied (Hwang, Malhotra, Kim, Tomiuk & Hong, 2010) where PLS has the capability to support latent variables. As such, results were analysed by using SmartPLS.

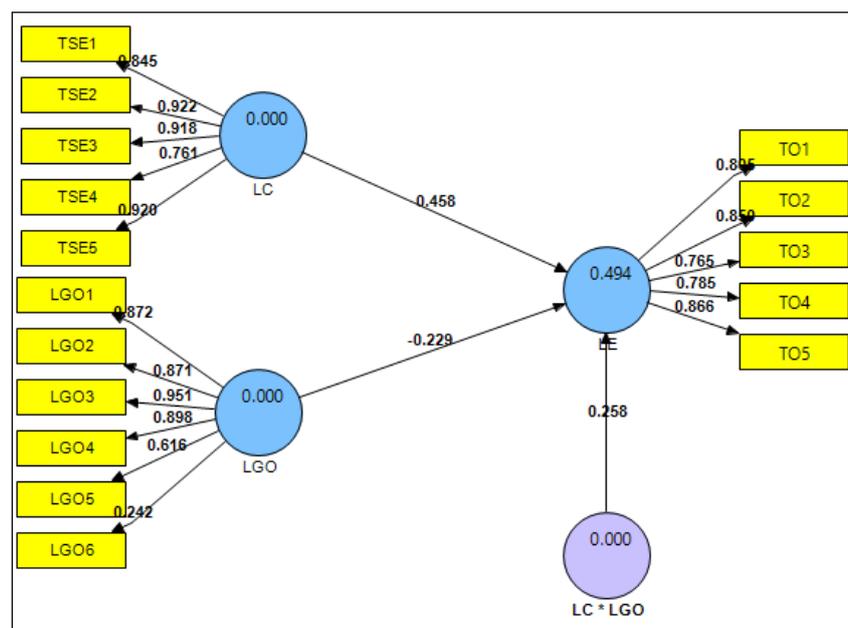


Figure 2: Model 1 & Path Coefficient

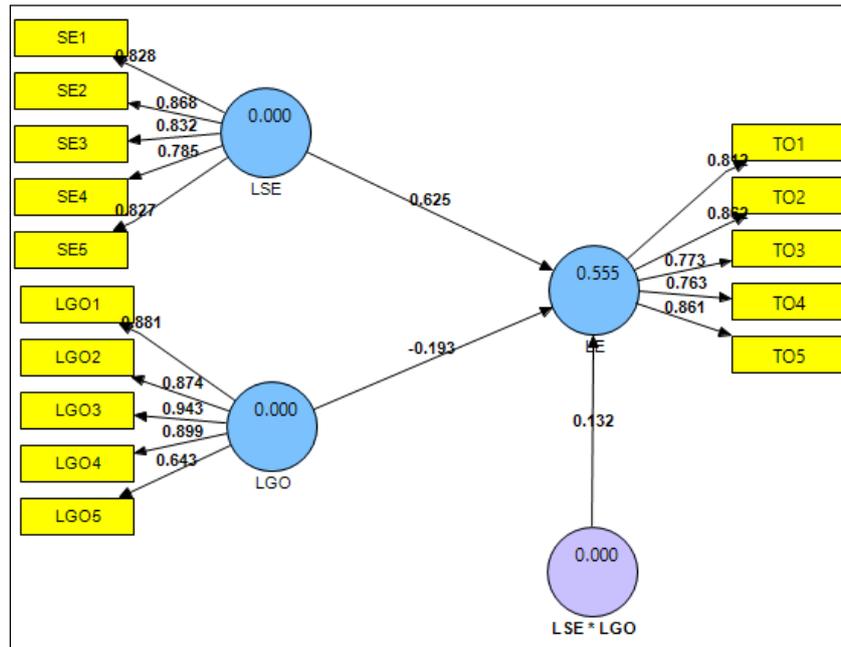


Figure 3: Model 2 & Path Coefficient

Convergent Validity

The outer-measurement models convergent validity sufficiency was assessed by calculating composite reliability (Hulland, 1999). The result of convergent validity analysis confirmed that both outer measurement models and their first-order factors are in line with reliability criteria, 0.70. Table 1 shows that all constructs composite reliability and their first order factors are in the range of 0.908 to 0.946. Therefore, the constructs linked with outer-measurement models revealed adequate convergent validity.

Discriminant Validity

Discriminant validity of the constructs was evaluated in three approaches. Fornell and Larcker (1981) suggested AVE utilization, which indicates the present of discriminant validity if the AVE square root is greater than all related correlations. As shown in table 2, AVE square root values are clearly larger than off-diagonal correlations, implying discriminant validity present at the construct level. Table 2 reveals that no correlation (ranged from -0.12 to 0.736) were greater than their respective AVE square root (ranged from 0.805 to 0.876), thus signifying sufficient construct discriminant validity. The cross-loadings showed in Table 3 displays adequate discriminant validity levels for each construct. Each individual item factor in bold of Table 3 shows strong loading values to the corresponding latent construct and low loading values to other constructs.

Table 1: Construct Validity & Reliability

	AVE	AVE sqrt	Composite Reliability	R Square	Cronbach AlphaA
LC	0.767	0.876	0.942	0.000	0.923
LE	0.665	0.815	0.908	0.600	0.874
LGO	0.730	0.855	0.930	0.000	0.907
LSE	0.686	0.828	0.916	0.000	0.886

Table 2: Correlations Against AVE Square Root

	LC	LE	LGO	LSE
LC	0.876			
LE	0.687	0.815		
LGO	0.003	-0.120	0.855	
LSE	0.736	0.730	0.009	0.828

Table 3: Cross Loading

	LGO	LSE	LE	LC
LGO1	0.880	0.014	-0.117	-0.040
LGO2	0.874	0.027	-0.084	-0.027
LGO3	0.943	0.045	-0.086	0.047
LGO4	0.899	-0.039	-0.132	0.023
LGO5	0.646	0.027	-0.044	0.022
SE1	0.002	0.828	0.664	0.628
SE2	0.053	0.868	0.634	0.650
SE3	-0.038	0.833	0.609	0.555
SE4	0.062	0.785	0.498	0.535
SE5	-0.031	0.827	0.613	0.671
TO1	-0.123	0.553	0.809	0.524
TO2	-0.084	0.719	0.857	0.601
TO3	-0.137	0.483	0.769	0.414
TO4	-0.062	0.553	0.773	0.620
TO5	-0.085	0.645	0.864	0.611
TSE1	0.081	0.704	0.581	0.846
TSE2	-0.061	0.637	0.633	0.922
TSE3	-0.013	0.674	0.654	0.919
TSE4	0.003	0.593	0.513	0.761
TSE5	0.009	0.619	0.616	0.920

Table 4: Path Coefficient & T-value

		Beta	Tvalue	
<i>H1</i>	LSE->LGO->LE	0.132	0.58	Not significant
<i>H2</i>	LCE->LGO->LE	0.258	1.583	Significant***
*** significant at 2-tailed				

Hypothesis Testing and Results

H1 states that LGO is predicted to have positive and significant moderating influence on LSE and LE relationship. Table 4 results confirmed this hypothesis is not supported with path coefficient of 0.132 and t-value of 0.58. *H2*, LGO is predicted to have positive and significant moderating influence on LCE and LE relationship. and the results in Table 4 supports *H2* with the path coefficient of 0.258 and t-value of 1.583. Summary of the hypotheses testing results are summarized in Table 5.

Table 5: Hypotheses Result

	Hypothesizes Relationship	Path Coefficient	T-value	Conclusion
<i>H1</i>	LSE->LGO->LE	0.132	0.58	Not Supported
<i>H2</i>	LCE->LGO->LE	0.258	1.583	Supported

DISCUSSION & CONCLUSION

This study main objective is to form an understanding of the influence of goal orientation on the relationship between academic self-efficacy and learning achievement. Learner goral orientation refers to learner’s aims for learning and performance outcomes established of the online programme. Where academic self-efficacy positively influence leaner choice of type of goal orientation in order to achieve academic success. In this situation, if learner adopts a mastery goal due to influence of his academic self-efficacy, the leaner reports better academic results.

This study suggested model to empirically test and to verify that are positive direct relationship among learner’s characteristics, learner’s goal orientation and on learning effectiveness. PLS technique data analysis was employed to achieve this objective Firstly, the most accepted relationship between learner’s characteristics learner’s goal orientation is verified. The direct relationship between the learner’s characteristics and learner’s goal orientation path coefficient is 0,258 and the critical ratio t-value is 1.583 which is significant. Secondly learner’s self-efficacy and learning effectiveness is not supported with the direct relationship with path coefficient of 0.132 and the critical ratio t-value is 0.58 which is not-significant. The findings of this study suggested that learning effectiveness among student in Malaysian higher education institutions can be strengthened and enhanced by emphasizing the factors that can boost learner’s characteristics, learner’s goal orientation but not learner’s self-efficacy.

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MONITORING STUDENTS' METACOGNITION IN KSSR CLASSROOM

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ABSTRACT

The ability to think critically is essential for students to face the challenges of the 21st century. Students should be equipped with the skills as those skills will help them to solve problems, make wise decisions and analyse information. One of the approaches to cultivate critical thinking is by monitoring their metacognition. Thus, the purpose of the study is to explore the methods of monitoring students' metacognition used by teachers in KSSR (Primary School Standard Curriculum; Kurikulum Standard Sekolah Rendah) classroom. Six primary school teachers were purposely selected in the study. Qualitative design was utilised where they were interviewed separately and probing was done to elucidate or illuminate the issue of study. Observation was also done as a method for methodology triangulation. The data from both sources was recorded and transcribed. Data coding was used to analyse the data where the transcribed text was segmented and labelled to form descriptions, main ideas as well as themes. These emerging themes were analysed and interpreted. The findings suggest that the student-centred approach exercised in the curriculum has enabled students to share and discuss information among them. The teaching techniques which include questioning approach, asking students to predict outcome and provide reasons were also employed. Formative assessment such as indirect questioning with diverse assessments were also exercised in monitoring students' thinking about thinking or metacognition.

Keywords: *Metacognition, KSSR, Critical Thinking, Qualitative Design, Primary School Teachers*

INTRODUCTION

Thinking, or cognition, (from Latin word means "to know") is defined as mental activities which often have images as well as words that enter in the brain when a person is processing information. Processing information can be elaborated by organising the information, understanding it, and communicating to others (Ciccarelli & White, 2015).

Thinking is used in everyday life; in making decisions, forecasting possibilities, making good judgment in practical manners, etc. However, according to Swartz and Perkins (1990), one should not only need to think, but to also think better, which simply means to think better in the common-sense terms. They suggested that when it comes to better thinking, people always focus on the outcome of thinking only, such as more reliable conclusions, deeper insights, sound decisions and keener critical assessments. Whereas better thinking outcomes should be paired with the process of better thinking, such as considering more possibilities, exploring further and wider, challenging assumptions and exercising keener judgement.

However, better thinking involves metacognition: the knowledge about and regulation of one's cognitive activities in learning processes (Flavell, 1979; Brown, 1978, as cited in Veenman, Van Hout-Wolters, & Afferback, 2006). In the simplest term, it means the thinking about thinking. Cognition and metacognition are inseparable as the former is regarded as (knowledge of) a set of self-instructions for regulating task performance whereas the latter is the means to self-instructions (Veenman, Van Hout-Wolters, & Afflerbach, 2006). Metacognition is inferred from certain cognitive activities and not always explicitly noticed during performing of tasks. In psychological literatures, there are two complementary elements of metacognition; a) knowledge about cognition, which means that cognition in general and some degree of awareness that involved and b) self-regulation, which is one's ability to plan, monitor and regulate his or her thinking that suits the demand of tasks and to evaluate his or her thinking outcomes (Flavell, 1979, as cited in Swartz & McGuinness, 2014).

Magno (2010) stated that metacognition has a significant path to critical thinking. He believes that metacognition has an influence on critical thinking skills. This view is supported by Gotoh (2016) who found that through metacognition regulation, students will be able to think critically in solving a problem. As critical thinking skill involved in students analysing and solving problems, metacognitive skill on the other hand helps students recognise the appropriate strategies in analysing and solving problems (Fang Huang, Ricci, & Mnatsakanian, 2016).

It is fundamental to be aware that thinking and critical thinking are two different terms. According to Alfaro-LeFevre (2013), thinking refers to any mental activity whereas critical thinking is controlled and purposeful, and using well-reasoned strategies to get the needed results. This is supported by Lai (2011) who stated that critical thinking is not just a mere mental activity but more than that. She also added that critical thinking is a deliberation of how people actually think and how they could or should think under varying circumstances.

Developing critical thinkers has become central to the education system. This necessity of change is supported by Darling-Hammond and McCloskey (2008) who suggested that in developing curriculum guidelines, the authorities, government and schools, should focus on what they called 21st century skills. They are "the ability to find and organise information to solve problems, frame and conduct investigation, analyse and synthesise data, apply learning to new situation, self-monitor and improve one's own learning and performance, communicate well in multiple forms, work in teams and learn independently". Saavendra and Opfer (2012) also stated in their research that 21st century skills include creativity and innovation, critical thinking, problem solving, decision making, and learning to learn (or metacognition). This implies that it is crucial for critical thinking skills (CTS) to be included in the school curriculum because it benefits students' academic achievement and also helps students to come to correct conclusions. Furthermore, it will also aid them to select the appropriate input from the internet and cope with such demands and challenges of the new world as critical thinking skills lead students to make wise decisions (Moore & Parker, 2012).

In Malaysia, the change from the New Primary School Curriculum (Kurikulum Baru Sekolah Rendah) or KBSR to the new Primary School Standard Curriculum (Kurikulum Standard Sekolah Rendah) or KSSR in 2011 beginning with the Year One students no longer emphasised the importance of knowledge only, but also in developing higher order thinking skills (Malaysia Education Blueprint 2013–2025 p. E-4). This seems to be a move in the right direction for teaching critical thinking skills. KSSR was introduced as an effort to restructure and improve the existing curriculum to ensure students are provided with the knowledge, skills and values that are relevant to meet current needs and challenges of the 21st century (KPM, 2012). The previous primary school curriculum, KBSR emphasised three skills; reading, writing and arithmetic, whereas with the current curriculum, KSSR, another skill is added to; that is reasoning (*menaakul*). Reasoning is thinking, specifically, critical thinking.

Moreover, the KSSR is developed to produce a balanced and holistic student who is able to think creatively, critically, and to be innovative through six strands; i) communication, ii) science and technology, iii) physical and esthetical development, iv) self-exposure, v) humanity, and vi) spirituality, attitudes and values (Malaysia Education Blueprint 2013–2025, 2013). One of the aspirations introduced in the KSSR is thinking skills, which emphasises that every student will be instilled with the love for inquiry and long life learning and to be able to connect different pieces of knowledge (p. E-4). Every student will need to master a range of cognitive skills that include critical thinking, reasoning, creative and innovation skills. Thus, this curriculum is expected to promote critical thinking skills among students and at the same time cultivating metacognitive skills.

STATEMENT OF PROBLEM

A number of research regarding critical thinking skills and the need for students to be able to think critically has been performed (Rahil, Zaidatol Akmaliah, Habibah, & Mohd Majid, 2004; Sulaiman, 2013; Suzana, 2012; Salminah, Rahmah & Abdullah, 2013). Furthermore, a lot of exploration on current situation of primary school students' thinking ability was also done with regard to achievement and cognitive development (Bernardo, Zhang, & Callueng, 2002; Azar, 2010). However, there is no one found with regards to students' metacognitive skills. Therefore, the study is conducted to fill in the gap of knowledge.

RESEARCH OBJECTIVE & RESEARCH QUESTION

The objective of the study is to investigate the method teachers employed in monitoring metacognition of students in KSSR classrooms.

Specifically, the study is to answer the following research question:

“How do teachers monitor student metacognition?”

RESEARCH METHODOLOGY

The study used qualitative design where interview sessions were done with participating teachers separately. Classroom observations were also done to explore how teaching and learning process took place and as triangulation procedure.

Six teachers from different academic background were purposely selected for the study. The selection of informants was observed carefully to ensure the objective is met. Since the aim of the study was to explore the methods of monitoring metacognition of students in KSSR classrooms by focusing on teachers' teaching approaches and methods, teachers were selected based on their experience in handling KSSR classroom.

All the interview sessions were held in accordance to the informants' convenience. Each of the interview session took about 45 to 80 minutes depending on how much information was elaborated by teachers, and some even with detailed examples. Probing was done continuously until the saturation point was met. At the onset of the interview, all the informants had to sign a consent form to prove their willingness as informants to the study. The researcher also ensured them that the data collected will be strictly used for academic purposes and their identity will be kept private and confidential. The purpose of this study was conveyed before interview questions were asked. All interviews were audio taped and they were transcribed for analysis purpose.

Six classes were observed twice in the study. The classroom observation was scheduled after all interviews have been done with the teachers. Those observations were taking place in a week. Each of observation took place for an hour, that was using the time of the class were conducted. the researcher recorded field notes during the observation. A voice recorder was also used during that time as to make sure none of the incidences missed during interpretation and analysis stage.

Methodological triangulation was also exercised where semi-structured interview, and observation were put to use in the data collection procedure. The results of the inter-rater reliability data showed 82%, which is more than acceptable benchmark suggested by Ericsson and Simon (1993). The calculation of the inter-rater reliability is shown below:

$$\text{Reliability} = \frac{\text{Number of agreements}}{\text{Total number of agreement + disagreement}} \times 100$$

A reliability of 82% is quite high. This conformed to the rate suggests by Ericson and Simon (1993). They mention that a reliability of 80% reflects high reliability. The calculation for this study is shown in Table 1.

Table 1

<u>Co-rater 1</u>	<u>Co-rater 2</u>
$\text{Percentage of Agreement} = \frac{26}{26 + 4} \times 100$ $= 86.7\%$	$\text{Percentage of Agreement} = \frac{23}{23 + 7} \times 100$ $= 77.7\%$
So $86.7 + 77.7 / 2 = 82\%$	

Both interview data and field notes were transcribed and the transcriptions undergone the same analysis processes. The process of data analysis as shown in Figure 1.

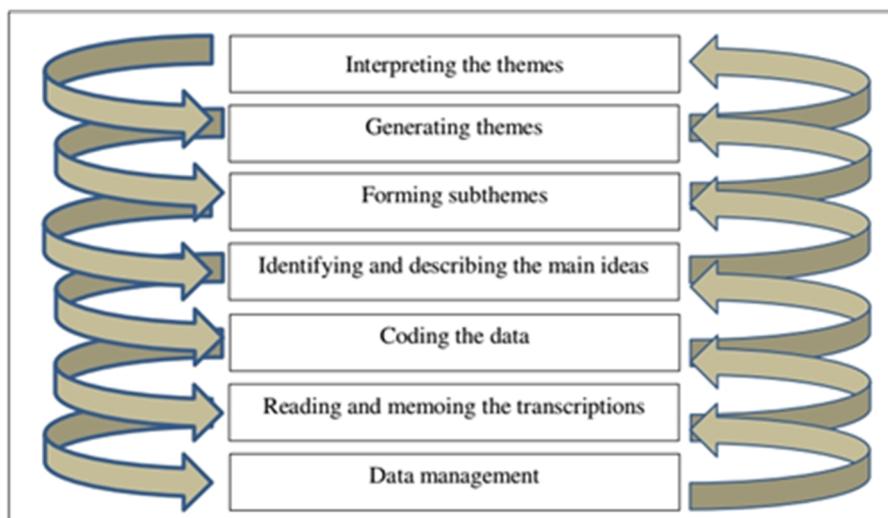


Figure 1: Data Analysis Framework, adopted from Creswell (2007)

FINDINGS AND DISCUSSION

Data from the interview and observation were utilised to understand the situation to obtain a better insight. A number of themes and sub-themes emerged from the data and those themes were interpreted accordingly.

(a) Student-Centred

The student-centred approach is used in KSSR classrooms where teachers are only facilitators and students have to construct their own learning. Before students were assigned to groups, teachers would conduct a brief whole class discussion for induction purposes where students needed to reflect on their previous knowledge as well as to predict what will be taught later. Then only students were assigned to groups and activities were done in groups. Usually when a teacher comes in he or she will introduce the topic of the day and give instruction to students to start working in groups. Since students were already seated in groups, it would be much easier to conduct group activities.

An example of a student-centred approach was during an English class where students were asked to perform a Reading Theatre activity. They were required to gather in front of the class and read the dialogue written in the textbook. According to Teacher 3, she conducted the activity to enhance students' self-confidence and reading skills and at the same time students were able to notice their level of reading proficiency which leads to self-reflection.

Group discussions allow students to monitor, assess and evaluate their learning. For example, in a mathematic class observed, the teacher gave information to students and they have to create a story based on the information provided. When the students asked to clarify, it indicates that the student was evaluating their learning whether what they understood was really what was being said by the teacher. On the other hand, through group discussions, students recognised different ideas from group members which signify that there were being self-corrective. Hence, group activities from student-centred approach permits teachers to monitor student awareness of their thinking.

In student-centred classrooms, many activities were done that involved students as doers. As mentioned by all the informants, they regularly conduct group discussions, group presentations and other class activities as their approach to teach the subject content. To exercise group activities, students were required to regulate their own thinking in order to achieve the goals or objectives of the activities or problem solving tasks. Indirectly, students were asked to think about thinking by regulating themselves. Self-regulation is a metacognitive skill that allows students to think about their own thinking process, to control their thinking process to achieve learning goals (Brown, 1987 as cited in Kayashima & Inaba, 1982)). Moreover, in group discussions, where usually students are required to solve problems, relate and apply to real life situations, they need to plan, monitor and evaluate their learning. For instance, they may ask themselves these questions 'What are all the things that I need to do to successfully accomplish this task?' 'What are the strategies, that I'm using, that is working well?' 'To what extent that did I successfully accomplish the goals of task?' These questions might not be seen explicitly from students but they are there to regulate student learning.

At the same time, through group activities in the student-centred approach, students were also monitoring and assessing their own learning, which are important characteristics of metacognitive skills. This is congruent with Brown (1987) and Kuhn (2000, as cited in Swartz & McGuinness, 2014) that self-regulation is a part of metacognitive where students have the ability to plan, to monitor and modify their thinking according to the needs of the task and to evaluate their thinking outcomes. Apart from that, group discussions allow student to reflect their learning as well, which is another metacognitive skill. This is because when students discuss ideas with each other and

their teachers, it makes thinking more concrete, and students learn what to ask, identify what they do not know and the also learn from other thoughts and ideas (Darling-Hammond et al., 2003).

In addition, during problem-solving activity, when students may be requested to relate or apply old knowledge to new situations, students will also observe and regulate their thinking. They need to ensure that whether the problem-solving process or the relationship or application made are going well or not, which essential for them to evaluate their progress on the activities. This indicates that they were thinking about thinking or metacognition. As a result, class activities or group discussions and group presentations, which are practised in student-centred approach, are ways or methods for teachers to monitor student metacognition.

(b) Teaching Techniques

(i) Questioning Technique

By applying various teaching techniques teachers were able to monitor student thinking. Teachers reported that they use questioning techniques as one of their teaching methods. This is also evident during observation. For example, in one of the classes observed, the teachers asked what the students have learnt previously,

To respond to the question mentioned by the teacher in the quote above, students must reflect on what they have learnt beforehand. Reflection allowed students to check whether they can remember or not what they have learnt.

Furthermore, in a mathematic class, the teacher gave different mathematical problems to different groups to solve. The teacher asked students on the steps to solve mathematical problems; from the story, what was given, what to search for, the mathematical operation and the solution.

The teacher kept on asking the steps to answer the question. Then the students needed to write the answers on the board. This required students' understanding of previous lessons and at the same time they need to reflect previous knowledge to apply to new problem solving process.

The findings indicated that the teachers were found to be selective in their teaching techniques, where they appropriately use questioning approach, and stimulated students to predict outcome and provide reasons to the answers. When teachers asked in classrooms, students needed to reflect on what they previously known in order to answer the question. Reflection requires what student know, care about, and able to do, that have them to develop awareness of themselves as well as providing pictures printable information on your learning (Darling-Hammond et al., 2003). On top of that, students may regulate their thinking prior to answering teacher's questions.

(ii) Predict Outcome

Besides questioning techniques, teachers were also found to demand students to predict outcomes as a way to reflect their learning. For instance, in a science class, students were requested to provide hypothesis before conducting an experiment. When students made a hypothesis, there were assuming what would be the outcome of the experiment.

In the English class on the other hand, the teacher asked students to guess the end of the story that she read to the class. By predicting outcomes, students were indirectly being taught to be creative and to reflect their learning. Students also were able to be imaginative based on what they know.

To promote metacognitive skills among students, teachers were found to request them to predict outcomes by reflecting past knowledge and information. Self-reflection aims at “constructing metacognitive knowledge by making formerly unconscious, intangible, or reflective process or event explicit” (Desautel, 2009, p. 2001). This is aligned with Brown’s model (1987, p.15) of metacognition which states that “predicting outcomes is an activity of cognition regulation involved in metacognition”.

(iii) *Provide Reason*

In addition to that, students were encouraged to give reasons as to build a solid foundation of their answers or solutions. For example, in a science class observed, the teacher asked his students to reason why some plants have their sprouts facing certain ways, why the root facing downward, why it is certain plants react to touch stimulation, and students manage to answer because the plant is reacting to the sun, water or to protect itself.

To be able to respond to the question required student to evaluate prior knowledge and to be aware of their thoughts.

Teachers were found to request students to reasons as proof of their understanding of subject discussed. Yet again, the awareness of own thinking through reflection and evaluation of prior knowledge is the key to providing relevant reasons (Desautel, 2009). Hence, to insist upon metacognitive skills of evaluating own learning, and by asking students to offer reasons to situation, teachers were indirectly promoted metacognitive skills in student (Halpern, 2014).

(c) Formative Assessment

(i) *Indirect Assessment*

Teachers conducted continuous formative assessments to ensure students’ learning. The assessments were sometimes done indirectly. Teachers post open-ended questions in the classroom and ask students to answer the question. Some of the questions may be difficult that students really have to think of the answers. The students have to reflect what they have learnt and at the same time, they have to relate their prior knowledge to the new information grasped.

(ii) *Various Assessments*

Accordingly, the informants also admitted that KSSR permitted teachers to practise either formative or summative assessment. Thus, teachers may opt for formative assessment that can be done through group work where teachers observed student participation as well as the verbal responses from students. Besides, teachers would also benefit from the freedom that is imparted in KSSR to monitor student metacognitive skills through formative assessment.

Furthermore, a teacher also explained that she also asked WH questions to students. Some WH questions may be easy, for instance What, When and Where but certain questions might be difficult such as Why and How. Teachers may assess student learning using these questions as well as to monitor student metacognition by helping students to reflect prior knowledge or information.

Student learning is also assessed through homework. An informant admitted that KSSR benefited students as it empowered students to use the technology. Every now and then students were required to surf the Internet to look for information to complete their homework.

To be able to use that technology wisely, it requires self-regulation, which is also a metacognitive skill. Students need to be selective and self-monitored to ensure that they were able to use the internet appropriately.

(iii) *i-Think Tool*

The use of i-Think maps also helps students to build their metacognitive skills. Knowledge is transferred from textbook or own information and concepts to the mind maps, which make easier for student to understand using iconic materials. In all of the class of observed, teachers were found to utilise that i-Think maps in the teaching and learning process. Although it is not compulsory to use the i-Think maps for all lessons, teachers seemed to utilise the thinking tool quite frequently.

While students transferred the information into the maps, subtly, they were monitoring and evaluating their own learning. It was necessary for students to examine the information and their own knowledge to ensure that they included correct information in the maps. Self-corrective also applied in the process of transferring the knowledge in the maps as students needed to check frequently if they have done by mistake.

Teachers were found to utilise the i-Think maps as tools to assess student learning. Students were directed to transfer knowledge and information into the maps, which required them to regulate their behaviour and knowledge. i-Think maps as tools for formative assessment give immediate feedback on both teaching techniques as well as student learning. As a result, students will be able to evaluate and monitor their learning, to check whether they have understood the subject matter taught. Self-reflection was also involved in the process of evaluating one's learning and through formative assessment; students reviewed their work and determined their strengths and weaknesses on the thinking and learning (Darling-Hammond et al., 2003).

CONCLUSION & RECOMMENDATION

The purpose of the study is to explore the methods teachers used in monitoring students' metacognitive skills. Semi-structured interview and observation were done as data collection method. The data was analysed through coding method. Findings suggest that teachers monitor students' metacognitive skills through group activities in student-centred approach, teaching techniques and formative assessment.

From the findings, the researcher infers that teachers monitored student metacognitive skills through student-centred approach, teaching techniques and formative assessment. However, the researcher should highlight an issue where teachers might not be aware that they were actually monitoring student metacognition. Most of the findings were gathered only from classroom observations and interpretation of the researcher. According to Prytula (2012), teachers were aware of the need to teach metacognition skills to students but they are not aware of their own thinking. The view is aligned with Curwen, Greitz, White-Smith and Calfee (2010) who suggest that teachers need to increase their metacognition in order to develop better student learning. Thus, it is essential for teachers to be aware of their metacognitive skills before they could indulge themselves into monitoring student metacognition.

It is believed that through interview and observation, the phenomenon can be understood. However, since the time was limited for data collection procedure, limited data collected. It is hoped that for future research, more time will be dedicated for observing students in classroom.

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PARENTS' PERCEPTION OF QUALITY IN CHILD CARE PROGRAMME AT THE INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA EDUCARE CHILD CARE CENTRE

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ABSTRACT

The purpose of this study is to obtain an understanding of parents' perception of quality in child care programme at the International Islamic University Malaysia EDUCARE child care centre. Besides, it also aimed to better understand the needs of young children through the eyes of the parents. Open ended interviews questions were adopted to gather information concerning teachers' experiences and concerns regarding child care programme. Preliminary findings revealed that parents' perception of quality revolves around the effectiveness of administration and management with the children, staff as well as the parents, staff training, staff commitment, and the teaching and learning materials. This suggests the importance of the efficient management in policy development and service improvement. The parents also stressed on the additional domains of quality that they consider important, such as systematic activities and safety.

Keywords: Conception, Quality, Child Care Centre, Child Care Programme

INTRODUCTION

To begin our understanding on the child care quality services in the present time, we must first relate it to the women participation in the workforce. Due to the rapid economic growth for the last twenty years, many opportunities have opened up for the Malaysian women in education as well as the employment. That scenario had contributed to more women entering the labor market. It was reported that the proportion of working women rose from 38.9% in 1970 to 62.9% in 1990 (Government of Malaysia. n.d, Sixth Malaysian Plan: 1991–1995, 415). Most of the jobs are urban based in which there is no relative or grandparents' assistance in looking after the children. Thus a greater proportion of working parents have to leave their children behind either at home with poorly educated domestic maids, Indonesian maids, their elders, the nannies or in childcare.

The above phenomenon has led to working parents becoming distant from their beloved children, while they strive at the work place for the betterment of life. The working parents are left with no choice except to send their children to child care centre for more than nine hours per day regardless of quality of learning that young children experience in the environment. Infants and toddlers in more hours of child care, regardless of its quality will be experiencing less sensitive mothering and less positively engagement with their mothers compared to those who are not (National Institute of Child Health and Human Development Early Child Care Research Network, 1999a). The time spent by the children in the child care centre is ultimately more than with their own parents. Due to that phenomenon too, childcare centres are seen to be the alternative and expanded greatly. Dahlberg et al., (2006) said that in many parts of the world, the set-up of the early childhood institutions was the result of the increasing demand for non-parental care, education for young children, social intervention and local infrastructure.

Therefore, the increase in the labor market of women in Malaysia could in turn be traced to high demand for childcare centre.

As a result of high demand from parents, there is increased involvement of the private sector in providing childcare programmes, particularly in terms of bringing “imported” models and materials. In addition, there is a tendency for many in the private sector to provide ‘commercialised’ programmes which are appealing to parents but which may not be sound in terms of child development principles. Increasing numbers of children ages 2 months to three years old being placed in childcare centres is the scenario that needs to be given serious thought. It is also being said that:

“As early childhood rises on the agenda of private and public issues, more and more voices are to be heard in more and more settings talking about early childhood education and care. Yet despite the growing volume and diversity of these voices, most seem to talk the same language of early childhood. Not only is it often literally the same language, as English becomes ever more dominant in the worlds of business, culture, science, technology and research, but it shares the same vocabulary: promoting development; ensuring readiness to learn and readiness for school; enhancing school performance; early intervention for children deemed to be in need, at risk or otherwise disadvantaged; developmentally appropriate practice and desirable outcomes; models and programmes; plans and cost effectiveness; regulation, standards; and most pervasive of all, the language of quality (Dahlberg et al., 2006, p. 1).

Therefore, quality child care is a crucial factor in balancing the participation of parents in the workforce and for child development. It is also important in the context of lifelong learning where child care centre is seen as a basic to a child’s education.

The quality of early care and education services is absolutely critical in providing a **beginning or foundation for life-long learning for young children**. The neuroscience research provides new evidence that the early years of development set the foundation for the skills and competencies that will influence learning abilities, behaviour and health throughout life (McCain & Mustard, 1999). Thus, there has been growing evidence that high quality early childhood care and education programme produce positive outcomes for children by affecting their developing skills such as social, cognitive, and language skills (Brofenbrenner & Morris, 1998). The other finding showed that the children in the centres with some or all of the guidelines (such as child-staff ratio, group size, and teacher training and education) had better language comprehension and school readiness and fewer behavioral problems for children age 2 and 3 than the children who were in centres that did not meet the guidelines.

Early childhood development studies and research in Malaysia scenario are new in which many areas are yet to be explored. In the Vision 2020, the commitment to the promotion of the importance of early childhood education has been made up and yet the result is far from what it is supposed to achieve. In the case of Malaysia, there have been several researches (Nureeyah 2004; Norizan 2008) which discussed the issues in early childhood education in particular to the kindergarten or preschool issues.

With regards to the above facts, the relationship between quality of child care and outcomes for children is of increasing interest to many people or the major stakeholders in early childhood education and care which include parents, teachers, researchers, and policymakers. Besides, the connotation of quality and early childhood care and education has been widely discussed and it is still being one of the subjects for the research to transpire. Therefore, the importance of early childhood care and education with regards to quality and the child care programme have been seen as more reliable and valid as many issues being supported by the studies done. Nonetheless very limited study has been done on parents’

understanding as well as an evaluation on the programme structure of early childhood programmes quality in particular child care quality programmes in Malaysia. Sadly, this is happening not only in Malaysia but also in the West. Kagan and Cohen (1997) recognizes how:

“Early care and education-unlike education for older children – has never been considered an entitlement. Periodic investments by federal state, and local governments and by business, coupled with marginal commitments to quality, have resulted in programmes that are often poorly staffed, poorly housed, and poorly run” (p.x).

Thus, in guiding young children’s learning and development, this study is worthy to be conducted as the substantial of the previous studies mentioned. The inspiration for the research should take into consideration of the “Malaysianisation” concept in general or the Muslim concept in specific for developing the benchmark of quality childcare programme.

CHILD CARE CENTRE AND DAY CARE CENTRE

In Malaysia, child care centre and day care centre can be used interchangeably as the two terms are relatively synonymous in addressing the issue of children services in Malaysia. The focus of this study will be on child care centre services yet the two terms will be defined to enable the readers to make differentiation and connection between the two. As childcare centre accommodates children below four years of age, this type of services is more vulnerable and vital for early development. The vulnerability lies in the quality of services for the longer hours spent at the centre, the incoherent qualification of teachers, the irregularity of programme, the flexibility of procedures and other related obstacles from different angles.

The definition of Child Care Centre as described in the Child Care Centre Act 1984 (act 308), incorporating all amendments up to 1 January 2006 says:

“...5. There shall be two categories of childcare centres as follows:

- (a) *home based child care centre which is a child care centre which receives less than ten children into the home of the person registered under section 7;*
- (b) *institutions based child care centre which is a child care centre which receives ten or more children.*

The day care centre according to the Care Centres Act 1993 (Act 506) and Regulation under section 2, incorporating all amendments up to 1 June 2006 can be defined as:

“ care includes protection, supervision, rehabilitation and training”,

“ care centre means a residential care centre and a day care centre within the meaning of the act”,

“ day care centre means subject to section 3, any premises at which four or more persons are received for care for a continuous period exceeding three hours between the hours of sunrise and sunset in a day, and for at least three days in a week, whether for reward or otherwise; but in the case of premises operated or managed by a natural person, a person who is a relative of that person shall not be reckoned in determining the number of persons received at the premises for the purposes of this definition”,

“ residential care centre means, subject to section 3, any premises at which four or more persons are received for care as residents therein, whether for reward or otherwise; but in the case of premises operated or managed by a natural person, a person who is a relative of that person shall not be reckoned in determining the number of persons received at the premises for the purposes of this definition”,

Statement of Problem

Despite the mushrooming childcare centres throughout the country due to high demand of childcare centre, the synchronization or the benchmarking on the childcare centres programme structure is seen to be difficult or even invisible. They exist by so many different names and that put us into limbo in knowing whether they can be reliable or not. Given this situation, it is a high time for us to put the synchronization in child care services in Malaysia. However, the quality itself is rather vague even to early childhood experts.

However, identifying the benchmarking as well as synchronization regardless of the civilization, cultural, nations and religion in defining quality childcare is not a simple thing to do. Supporting to that, idea of quality childcare can be more elaborated even in a complex way of understanding it.

“I challenge the global distribution of any one single framework of quality. Such a framework might inevitably lead to a world of uniformity, a standardized recipe for the quality of childhood. There are many potential criteria for quality which are closely linked to belief about goals and functions...These beliefs are in turn shapes by perspectives on childhood, by cultural patterns and personal values (Woodhead, 1996: 17, 37).

As an international buzz word, ‘quality’ does not only refer to child care services but in everything particularly services and products. As Woodhead (1996) notes,

“Identifying basic standards is too often a euphemism for adopting the quality indicators that preoccupy programme managers in materially affluent, industrialized, urban societies (notably building standards, staff qualifications and ratios and material resources). These indicators originate from circumstances of economic affluence, professionalized employment patterns, combined with materialistic and technological values (p.48).”

Children who experienced higher quality child care centres had shown better performance in their cognitive skills such as in math and language abilities as well as their and social skills (Peisner *et al.*, 1999). Thus, knowing the positive outcomes of quality childcare, this study is intended to elicit and describe the parents’ conceptions of quality child care. At the beginning of the childcare establishment, it was meant to meet the needs of working mothers or adults while they engaged in the fields. Even nowadays, we still can hear that the reason behind the support of childcare is mainly on the easiness to the parents and to the employers in gaining the best productivity in workplace. The issue of quality is not in the agenda at all and as long as there is a space or services provided, it is all that matters. Therefore, this is also another problem that relate to the misconception or no conception of quality childcare programme in this context.

Some suggestion given to enable us to see and measure the quality child care programmes will be on the philosophy or the programme where children’s individual differences is at their priority and provide developmentally appropriate experiences to children (Bredenkamp, 1987). Unfortunately, that is not easy to say in only just looking at the booklet or brochure of the centre. The curriculum or the contents of the programme are in the hands of the operators or the owners of the childcare centres. Some are just intended to sell or franchise their programme or the quick and fast reading programme that currently is in demand. Measuring and achieving quality are not as easy as it sounds.

Due to that situation, selecting and choosing the best and quality programmes for their children become headache and chaotic, thus, parents tend to end up with the programme that seems interesting, convenient and affordable to them (Kagan & Cohen, 1997). As many of low-income parents tend to send their kids to the cost-valued childcare centre rather than focus on the quality itself because they couldn't afford to pay the prices. Whereas individual institutions will be emphasizing on certain common grounds that they called it as 'frameworks of normalization' In that claim, many terms and issues will be brought forward such as curriculum guidelines, rules and regulations for the centre, systems of inspection and so on (Dahlberg et al's, (2006).

The conception of quality in child care particularly for parents need to be given a priority. The benchmarking or synchronization to define a quality childcare programme from Malaysian parents' perspectives will then be drawn up. All that can be a starting point in meeting the balance to the existing programmes in the context of research based and people in the fields. The discussions about the quality of early childhood programmes often confuse the programme elements which turn to influence quality with quality itself (Layzer, et al's 1993). That was because their conceptions of a quality childcare are not in congruence with each other. All these are the footing of all grievances that distort the development of young children.

The increase of women in the labor force has led to the booming of childcare centre. It is to achieve the balance between earning for the family and at the same time obtain the proper care and education that it should be. With that argument, more information is needed on the quality of childcare programme structure in Malaysia in order to understand the internal perspectives of quality and childcare programme structure. From that point, an inclusive definition or what Malaysian parents mean by quality childcare can be derived. We can then focus our concern on the level of quality child care. We do not want to jump the gun not knowing what is really meant by quality and yet talking about implementing high quality childcare in our community.

As mentioned earlier, many researchers have highlighted that the quality of early care and education services is absolutely critical in providing a beginning or foundation for life-long learning for young children. Nonetheless very limited study has been done on parents' understanding as well as an evaluation on the programme structure of early childhood programmes quality in Malaysia. As a result, a synchronization of programme structure for the curriculum is far from reaching the aims to give proper care and education to our children. It is hoped that in applying a qualitative way of getting to the participants' conceptions of quality childcare programme means to them, the result will be more transparent.

Purpose of the Study

The purpose of this study is to elicit and describe parents' conception of quality in childcare programme at IIUM EDUCARE Child Care Centre in Gombak, Selangor, in Malaysia.

Research Questions

The study aims at answering the following main questions:

1. What are the conceptions of parents on quality in child care programmes?
2. What should be the roles of parents to ensure quality childcare?

Significance of the Study

With the growing concern and attention to children's care and attention during the early years especially below four years of age, it is hoped that this study will give an insight to enrich children's total development and the Malaysian Early childhood programme as a whole. The people who are involved directly in the establishment and also the running of the childcare centre are the people to approach to know and understand what their conceptions are with regards to quality childcare in Malaysia. The result will also benefit and guide the policy maker as well as the practitioners in the field to be more aware of young children's needs and support good outcomes for children. It is also to ensure that the children have the opportunity to participate in quality early childhood education.

This study will contribute to the existing body of knowledge on the quality childcare in Malaysia. It will also add on to the literature of early childhood care and education in Malaysia particularly in defining the quality childcare or factors constitute quality childcare. The inputs from the people involved directly or indirectly in the field will give a clearer picture on the current situation of the programme and the quality standard of early childhood care and education in Malaysia. Based on the inputs gather will then give an understanding of what quality childcare programmes are. For instance, the early childhood professionals can wisely reason out their judgments in selecting the instruments for their studies when the quality of childcare programmes is concerned. Thus, the practitioners such as teachers, parents and administrators will also discover what are the benchmarks or common grounds or guidelines for the programme to be called as quality. Those benchmarks can be applied or implemented by the practitioners in their programme. With those mentioned benchmarking things, the professionals and experts can conduct the studies with concern to quality childcare for the betterment of children.

The Site of Research

The setting for this research is the IIUM EDUCARE Child Care Centre, Gombak, Selangor, Malaysia. It is a unit under the supervision of Institute of Education, International Islamic University Malaysia. The IIUM EDUCARE Child care centre programme stresses on all aspects of development including the cognitive and intellectual development thus facilitating children total development. The children are learning primarily through play activities such as water play, sand play, role play, free play and so on. Apart from that, there are also other activities such as storytelling, songs, games, reading aloud, and language development. There are about 30 teachers at IIUM EDUCARE Child Care Centre and four of them were chosen for this study. The teachers selected are the permanent staffs of the centre, who have at least worked in the centre for about two years. They are three teachers or care takers whereby one of the respondents is the supervisor in EDUCARE itself. The reason for choosing her is because her duty is mainly in the childcare section where she is responsible for supervising the teachers with small children.

Methodology

This study uses phenomenography, a qualitative research methodology, within the interpretivist paradigm, that investigates the qualitatively different ways in which people experience something or think about something (Bowden, J.A. 2000).

The participants' recruitment began by contacting the selected teachers in childcare centres mentioned earlier. The permission was granted and the appointment was set up by the supervisor of the centres after explaining about the study. The researcher then directly distributed invitations to participate in the study through the childcare centre supervisor. Participants were invited to participate in an interview and focus group discussion at a time convenient to them. During the study one participant cannot proceed to the second phase of the study due to the maternity leave. Open ended interviews questions are designed to gather information concerning teachers' conceptions of quality childcare programme at their own premises. It is also aimed to obtain their reflection on their role in the aspect of child

development by focusing on the experiences and concerns regarding childcare programme. The interviews were then followed with a focus group discussion. To begin the focus group session, the researcher invited the participants to brainstorm a list of attributes they identify when thinking of quality childcare. Each subject then generated ten most important characteristics when identifying quality childcare guided by the questions asked. The group members were then grouped together to discuss similarities and differences between their lists. Once the data have been collected, the researcher then progresses to examine the interview transcripts for possible emerging themes. Prior, all the interviews were tape recorded with approximately fifty to sixty minutes spent for each session. Then, it was followed by the transcribing process in order to grasp the accurate understanding of what was being said by the teachers interviewed.

FINDINGS AND DISCUSSION

Analysis of interview and focus group data revealed four primary themes: (a) organization and structures, (b) programme or curriculum, (c) environment, and (d) safety. This conceptualization is simple to define, however, it is complicated to state which is less or more important among the components or themes for a quality child care centre. Therefore, it is easier to position that each theme of the diagram is definable and separate yet also interrelated and interdependent. The themes from teachers' conceptions on quality child care can be conceptualized from diagram 1.

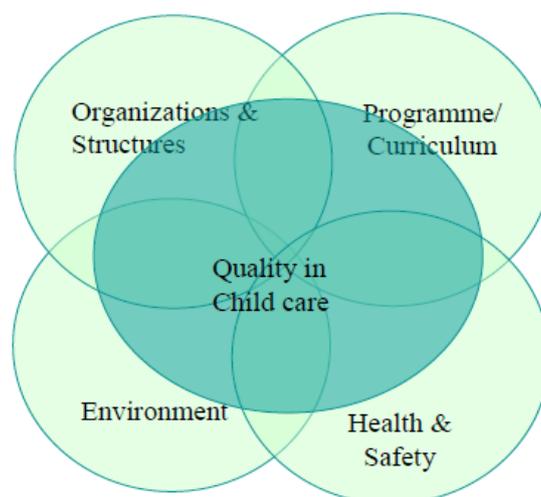


Diagram 1
Quality Child Care: Parents' Conceptions

Organizations and Structures

The structure of a child care centre is similar to the frame of a house. It includes the legal structure, written policies and procedures, the physical environment and the philosophical structure of the programme (Jorde-Bloom 1991). The teachers in this study emphasize on the organization and structures in initiating the programmes for the staff, parents and children. They said that the management will need to play their role in developing and upgrading the programme of the centre especially the principal or the director has the authority to bring changes to her or his centre. However, the principal or the director and the other management team of child care centre cannot work in isolation but must be part of a coordinated, systemic efforts to create and support the mentioned infrastructure that will contribute to quality early childhood education (Gallagher & Clifford 2000). The importance of having a capable, competent and efficient director or principal was also highlighted which also touched on the organization and structures of the centre. According to one of the teachers, the problems in the centre can be dealt with easily by that type of leadership. The regular and constant two-way

communication that occurs between staff and the director in the formal and informal meetings are seen to be a bridge for an effective relationship. Having and maintaining such occurrence will give the teachers the opportunity to express their feelings on the centre's matters or even their simple personal problems. The informal meetings such as the centre gatherings, celebrating big festivals allow both sides to be closer to each other by breaking the barriers of not knowing. Once the relationship can be build up, the communication will become more relax and open in addressing any issues related to the teachers, children, parents and so on. The director will have the chance to know the staff personally and the importance thing is to be acquainted with the grudges that the staff feel without other people telling it but from the staff themselves. With the fact that the director is the right person to clarify most of the policies and procedures, the staff will get the first class service. The processes of the child care centre's organization and the supporting structures in it definitely have an impact on quality child care thus to the children's total development.

Environment: (a) Teachers' Attitude

The teachers highlighted on the training with regards to their job improvement on early childhood education. This component is very much associated with the commitment, creativity, love and passion with children. The passion and commitment that resulted from positive attitude will help them to become excellent staff. Staff qualifications and training alone will not help a person to be a good child care provider as she or he will not be able to link out the commitment, love and passion to the children. One teacher said:

“What I want to see in a quality child care is a commitment by the staff such as staff creativity in solving problems that they face while taking care of the children while crying and so forth. And a quality child care should not have the equipment that is not safe and the staff who cannot cooperate and give commitment”

Arnett (1989) reported that childcare providers who have qualifications in early childhood were more knowledgeable than those did not. Staffs with continuous and relevant training will react better to the situation, prepare more appropriate learning experience, communicate with confidence and handle all kinds of situations with better judgment. They are being trained to do so and equipped with the knowledge on children's need in the training. The attitude will then play an important role in changing the concept of being with children means to get wet, dirty or active most of the times. The most important aspect or positive attitude in quality child care is the loving and caring relationship between the child and the teacher or care provider.

Environment: (b) Parents-Teachers' Partnership

In response to the question asked about quality childcare respondents also indicated suggestions to establish partnership with parents. The teachers themselves agree that such relationship is very important to children and that will add to the quality of a child care centre. However, the teachers indicated that some difficulties arose in trying to work with parents such as lack of time was a significant barrier in doing that, especially when communication centred on informal contacts at the arrival time and at the end of each day. They also expressed that the illumination to the parents concerning certain issues such as contagious diseases was less successful because their attitudes who take this lightly as one of the teachers said:

“Okay. Its's good that EDUCARE gives the session with her ... involving parents and staff but it is disappointed because the parents who turned up after being invited. Praise be to Allah, ... only twenty people from five hundred people. Emm.... It's very obvious from parents' commitment with regards to this contagious diseases' illumination was quite less. From my opinion, the EDUCARE side had given ...such as informed the parents earlier but the parents' commitment themselves...maybe busy, have no time to

attend. Take this thing lightly because if they know the contagious diseases are dangerous...they will be in trouble of sending their children whenever their children got infected by chicken pox or so on... they still want to send right? That's my view.

They further said that the management should initiate and allow for this kind of relationship by encouraging the parents to become involved. The activities such as meetings, gatherings, discussions, report day, events and so on can be done. With regards to the diagram and the four primary themes that are conceptualized by the researcher, parents as well as others such as teachers, communications and equipment are fall in the theme of environment.

Environment: (c) Internal Communications

Internal communications among the staff in the child care centres also regarded as important for quality child care. The staff or the teachers indicated that teamwork, understanding and friendship are very important to them. Good communication and happy environment will make the teachers perform efficiently.

Health and Safety

Along with the efficient management or organization of a child care centre, teachers also consider other aspect which is safety of the children. It should be the main priority when quality of childcare is concerned. A safe and clean environment will be one of the goals and objectives as the children are easily get infected by the viruses from the environment. The proper food preparation and handling are to be taken care off by not neglecting the basic food nutritious for the children to grow healthily. Besides that, the safety part will ensure all the equipment used are specially made for them such as the round edge.

Programme and Curriculum

The programme and curriculum are important components for children to develop physically, mentally and socially. A very few child care centres are equipped with a developmentally and culturally appropriate curriculum framework to be followed in which teaching and learning process are designed to incorporate play activities and also children's growth and development. Age appropriate learning environment is also parts of the programme and the curriculum were also mentioned by the teachers when describing quality child care elements. They are:

“To me, the quality in child care...is such as apparatus that we prepare according to the development of children that we take care off. It is like the age of an infant.”

“Aaa.... To me, the child care centre programme, a quality child care centre... it must have... the scheduled programme such as time table for the staff, children, err... mm... how it handles, time table from the syllabus. Emm.... the syllabus is from the infants to the age of two, three and above right? The example is from the education aspect such as language, cognitive, physical and so on such as emotional. Then in terms of staff... in terms of staff, the staff have to follow work schedule, follow regulations.

As usual when people talk about environment, they always refer to the physical apparatus whereby, learning environment can also include many other things such as the teachers themselves and the peers. In this study the teachers were referring only to the physical age appropriate learning environment inside and outside the centre. Physical age appropriate learning environment is the concept that concentrates on the importance of the physical abilities of the children. The environment is children friendly environment where all apparatus is specially designed or being tailored made for the purpose of their physical needs that intentionally will affect their emotions.

CONCLUSION

In short, the findings revealed that their conceptions of quality revolve around the effectiveness of administration and management with the children, staff as well as the parents, staff training, staff commitment, and the teaching and learning materials. This suggests the importance of the efficient management in policy development and service improvement. The teachers also stressed on the additional domains of quality that they consider important, such as systematic activities and safety.

From the study it is also found out that quality childcare programme encompasses many things. With the increasing demand for child care services, the people involved in this area will have more opportunity to provide and enhance the elements of quality in child care compared to old days. Apart from that the need for more thorough coordination and regulation of child care services need to be improvised and upgraded. The higher authority should provide grants for the establishment and operation of child care institution in which the eligibility for funding are to be controlled under stringent standards and procedures. In a nutshell, further research is needed to study comprehensively on the aspects mentioned by the teachers. Besides, the perspectives from other than teachers such as parents, policy makers and administrators and even the children themselves in Malaysian scenario are not yet studied. It can be done based on qualitative and quantitative method of study on the child care quality. Thus developing their conceptions on quality childcare will help many people in finding the similarities or common understanding of what constitute quality child care. The management of the centre either they are private or government, need to be well versed in their job which means that they need to have a very good planning in terms of short terms and also long terms planning. Besides, the capability of handling the challenges, problems and critical situations will determine the process of managing and ensuring the quality child care programme.

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PERCEIVED CHALLENGES IN OPEN AND DISTANCE LEARNING AMONG NURSING STUDENTS OF OPEN UNIVERSITY MALAYSIA: A DESCRIPTIVE ANALYSIS

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ABSTRACT

Open and distance learning (ODL), a structured learning whereby the students and instructors are separated by time and place, is currently the popular trend among working adults across the nation. From higher nursing education perspective, it must be made accessible, affordable and flexible to allow the nurses to cope with the demands and pressure of busy work and family commitments that give rise to several challenges. Hence, the main objective of this study is to examine perceived challenges in ODL among undergraduate nursing students of Open University Malaysia (OUM). The study employed quantitative approach by using close-ended questionnaires. A convenience samples of registered nurses (RNs) undertaking Bachelor of Nursing Sciences (BNS) programme (n = 81) completed the face-to-face questionnaires. Data analysis using descriptive statistics collected from 81 respondents from five OUM learning centres. The perceived areas of challenges were grouped into: perceptions of ODL for continuing education; perceived challenges facing ODL students; instructional related challenges; and institutional related challenges. Surprisingly, the findings indicate that BNS students are facing only some extent of challenges in their learning particularly within their own circles with perceived challenge highest on financial constraints (54.3%). However, they demonstrate positive perception of ODL for continuing education with the majority (70.4%) agreeing that it is relevant with current teaching-learning strategy. There is no obvious indication of perceived challenges instigates from instructional and institutional factors as the majority disagree (51.9%) that they are facing unhelpful course information and lack of direction; and (46.9%) disagree lack / delayed of important information, respectively. Above all, the findings address students' concerns in improving student experiences, and enhanced instructional and institutional contributions that marked the achievement of ODL outcomes. In essence, this study has shed some light into challenges faced by ODL nursing students and the strategies to further ameliorate the implementation of ODL.

Keywords: *Open and Distance Learning, Higher Nursing Education, Perceived Challenges*

INTRODUCTION

Distance education has experienced dramatic growth both nationally and internationally since the early 1980s. It has evolved from early correspondence education using primarily print-based materials into a worldwide movement using various technologies. The goals of distance education, as an alternative to brick-and-mortar education, have been to offer degree-granting programmes, to battle illiteracy in developing countries, to provide training opportunities for economic growth, and to offer curriculum enrichment in non-traditional educational settings.

In Malaysia, the offering of open distance learning (ODL) programmes is consistent with the mission of the Malaysian Ministry of Higher Education, and is a critical endeavour for the survival of higher learning institutions (Dzakiria & Mohamad, 2014). Santhi, Mohd Ghazali, and Loo (2015) define ODL as the provision of flexible educational opportunities in terms of access and multiple modes of knowledge acquisition; flexible means the availability of choices for educational efforts anywhere, anytime and anyhow; access is the opportunity made available to all, freeing them from constraints of time and place; and multiple modes imply the use of various delivery systems and learning resources.

With the intent of making university courses and programmes more accessible to learners, several ODL and dual mode institutions in Malaysia are offering various courses and programmes. ODL delivery began in Malaysia in 1969 and it is getting larger, more popular and better. Open University Malaysia is the pioneer ODL provider for many higher education programmes and Bachelor of Nursing Sciences (BNS) is the most significant for nursing education in this country.

Nursing education is challenged to meet evolving healthcare needs, while at the same time has to preserve the standards and integrity of the profession. The contemporary knowledge-driven society requires that nurses upgrade their knowledge and skills in order to remain competitive and competent in a fast-changing environment. ODL is a suitable way of ensuring opportunities for all to engage in continuous professional development and lifelong learning. The structure of ODL provides learners with the greatest flexibility. However, learning at a distance is not without problems (Dzakiria, Kasim, Mohamed, & Christopher, 2013).

It is challenging for nurses and healthcare institutions in which they work, to support lifelong learning especially if they have acute staffing problems and unable to release nurses for prolonged periods of study; the escalating costs related to further education is often prohibitive for many nurses who cannot afford to interrupt work for study; while the pressure of combining shift work and family life often excludes continuing education.

Since the programme's inception by OUM, little is known about learning experiences of ODL students from the aspects of their learning needs and support verses the teaching-learning methods and the implementation of the programme on the whole. In particular, it is not clear whether students perceive the program positively. Therefore, this study aims to identify issues concerning the implementation of ODL based on students' perceptions which particularly focused on their perceived challenges while undertaking ODL programme. Research related to students' learning experiences has focused on identifying factors related to their perceptions on ODL for continuing education; challenges they encountered while being ODL students in general, instructional-related and institutional-related.

Factors affecting students' satisfaction may be individual which includes readiness, time and family and financial support or may be organizational and may involve the environment, management and support services. Bisciglia and Monk-Turner (2002) argue that ODL students will be more enthusiastic about this type of learning environment because ODL programmes are designed to serve an off-campus population.

The positive and negative factors associated with ODL programmes may correspond to students' perceptions of ODL. Despite the important role and increased popularity of ODL, different people perceive the advantages of ODL differently, and their perceptions have influenced attitudes to the acceptance and use of ODL in the education system (Kaphesi & Banda, 2018). In other words, the truthful assessment of students' perceptions is a crucial factor, as the success of the ODL programmes could be affected by how it is viewed by the individuals it serves.

LITERATURE REVIEW

Despite the rapid growth in popularity of distance learning, the issues surrounding quality of ODL particularly in nursing education have been discussed and debated by many different parties including non-stakeholders. Regardless of who is interested and involved in quality of this unique educational environment that ODL establishes, all are put in emphasis the need to have what contributes to quality of this mode of education.

In actual fact, students' judgments on ODL for continuing education are the prime issue that leads to their further perceptions on challenges while undertaking ODL programme. Previous study has reported that identified flexibility and convenience as strengths of online learning (Hitchcock, Meyer, Rose, & Jackson, 2002) that obviously contributes to positive perceptions of ODL and inspired students in continuing their education. This finding is aligned with another recent study by Harerimana et al., (2016) who revealed that about 63.6% of the participants joined different ODL programmes due to the flexibility of the delivery mode which builds on self study. On the other hand, Ahmad (2018) discovered that from the aspect of financial support many nurses had grieved the escalating costs related to further education are often prohibitive for them who cannot afford to interrupt work for study.

It has conclusively been shown in the study by Melrose and Gordon (2008) when the students affirmed that restrictions of healthcare workplaces pose unique access challenges especially with the shortage of staff, nurses' requests for time off was denied and they were required to work overtime, instead. They became exhausted after long and demanding hours in the workplace; shift work made accessing to tutorials difficult, and forced to use off-days or holidays for clinical practice. This challenge seem to be consistent with another research by correlated with acute staff shortages that make it difficult for many nurses to leave their clinical areas to undertake further education, even for short time periods of distance education (Ahmad, 2018). This issue apparently give rise to another challenge faced by ODL students from the aspect of conflicts between work and study schedule.

Along with these challenges, however, there is increasing concern over workplace restrictions, where the current nurse shortage may not even allow students to leave in order to attend their tutorials and practicums, thus perceived as lack of support from the employer. This practice by many nurse managers has been challenged by Ledwell, Andrusyszyn, and Iwasiw (2006) whose studies demonstrated how nurses pursuing their degrees online needed employer support to feel empowered.

Distance education, a structured learning in which the student and instructor are separated by time and place, is currently the fastest growing form of domestic and international education. What was once considered a special form of education using nontraditional delivery systems is now becoming an important concept in mainstream education.

More recent attention has focused on the comparison of students' academic performance on a traditional face-to-face course to those studying the same material via an online alternative. Mgutshini (2013) conducted a comparative study to explore student satisfaction with their learning experience with regard to each mode of teaching and learning experiences in psychiatric nursing. Online students in this study expressed greater satisfaction with their learning experience than their campus based peers. This was unpredicted, particularly if considered that in the latter medium students have much more direct access

to tutor support and all of the other campus-based student support systems. What seems to hold the key is the fact that within online classes, each student has an equal opportunity to express their viewpoints and be heard more than in a campus-based class for the fact that only vocal students are motivated and get opportunities to contribute.

Another observable possibility is the campus-based class has an average of three hours for the weekly-taught session and discussion seminars whereas online students had access to an audio recording of each taught session at all-time round the clock.

A different major instructional related challenge reported by the students in the study conducted by Bisciglia and Monk-Turner (2002) was that they did not receive all the study material in time to complete their assignments. For instance, the students received some material after the deadlines for their assignments had passed which affected their ability to submit the assignments. Furthermore, some students indicated that there was a lack of teaching and learning resources in the off-campus which put them in distress.

Dzakiria, Kasim, Mohamed, and Christopher (2013) point out that the crucial element of success factor for students attending ODL programme is the level of interactivity within the tutor-student circles. The study supported the widely held belief that a high level of interaction is desirable in ODL environment (Dzakiria, 2008; and Dzakiria & Idrus, 2003) and positively affects the learning experiences.

Good distance learning courses result from institutions that provide quality learner support systems via effective communication for students and instructors. McClary (2013) suggests support systems can be divided into three different areas; academic support, administrative support, and technical support. Academic support involves instructors providing substantive engagement and feedback for course activities. Administrative support involves things such as financial aid, advising, registrar services etc.

Network resources and technical support is significant in sustaining ODL experiences. Dzakiria (2013) indicates clearly that in order to deal effectively with large numbers of students coming from a rich variety of backgrounds, it is crucially important to back the teaching/learning processes with efficient delivery and support systems. However, the accessibility to network resources and technical support were moderately reported (61.7% and 69.2%) by Dzakiria (2013).

Factors found to be influencing students' perceptions on ODL that have been explored in several studies could become the point of reference. It is seen that one important element of success factor for students attending ODL programme is their level of perceptions and judgment upon their learning environment and experiences.

FINDINGS AND DISCUSSION

This study utilized a quantitative non-experimental cross sectional survey approach using self-report questionnaires. A convenience samples of registered nurses (RNs) undertaking Bachelor of Nursing Sciences (BNS) program (n = 81) from five OUM learning centres completed the face-to-face questionnaires.

Demographic Findings

The average age of nursing learners involved in the study is between 25-35 years old (59.3%). Majority are female participants (96.3%) that contribute their opinions in this study. Majority of them are staff nurses (74.1%), Malay (74.1%) working in public hospitals (74.1%). In relation to professional qualification and years of working experiences in nursing, 49.4% have post-basic nursing education and 51.9% have more than 10 years working experiences. These findings indicate the staff nurses in their

prime ages with many years of experiences were still enthusiastic to engage themselves in lifelong learning. In relation to computer skills, 79% of the participants claimed that they have intermediate level. This finding is important because computer literacy is an essential skill as ODL students. Interestingly, in relation to place of internet access, 63% reported that they access the internet both from home and workplace. Due to the nature of their shift duty, they leverage on the internet facilities at home and workplace to support their learning experience as ODL students.

Perception of ODL for Continuing Education

The survey responses for the perception of ODL as choice of continuing education in this study are captured in Table 1. Overall, majority of the participants agree that ODL as mode of continuing education base on capacity to learn independently (54.3%), flexible mode of learning (53.1%), convenience and self-paced learning (59.3%), appropriate for working and busy adults learners (51.9%), non-compulsory face-to-face learning (43.2%) and unlimited time frame for graduation (51.9%). This is in line with the study by Yee, Ali, Rahim, Ahmad, and Khan (2016) which both environment and personal factors are significant variables influencing OUM learners' choice in selecting ODL as a mode of study despite perceived challenges. Similarly, Hitchcock et al. (2002) reported that identified flexibility and convenience are the strengths of online learning, and believe to contribute to positive perceptions of ODL and inspired students in continuing their education.

Table 1: Perception of ODL for Continuing Education

Variables		Total N = 81 N(%)
Capacity to learn independently	Disagree	5(6.2)
	Neutral	19(23.5)
	Agree	44(54.3)
	Strongly Agree	11(13.6)
	Missing	2
Flexible mode of learning	Disagree	2(2.5)
	Neutral	18(22.2)
	Agree	43(53.1)
	Strongly Agree	17(21)
	Missing	1
Convenience and self-paced learning	Disagree	2(2.5)
	Neutral	19(23.5)
	Agree	48(59.3)
	Strongly Agree	11(13.6)
	Missing	1
Applicable to all learning styles	Disagree	2(2.5)
	Neutral	18(22.2)
	Agree	46(56.8)
	Strongly Agree	14(17.3)
	Missing	1

Relevant with current teaching/learning strategy	Disagree	3(3.7)
	Neutral	13(16)
	Agree	57(70.4)
	Strongly Agree	7(8.6)
	Missing	1
Appropriate for working and busy adult learners	Strongly Disagree	1(1.2)
	Disagree	3(3.7)
	Neutral	15(18.5)
	Agree	42(51.9)
	Strongly Agree	19(23.5)
	Missing	1
Non-compulsory face-to-face learning	Strongly Disagree	6(7.4)
	Disagree	8(9.9)
	Neutral	23(28.4)
	Agree	35(43.2)
	Strongly Agree	8(9.9)
	Missing	1
Unlimited time-frame for graduation	Strongly Disagree	2(2.5)
	Disagree	5(6.2)
	Neutral	22(27.2)
	Agree	42(51.9)
	Strongly Agree	9(1.1)
	Missing	1

Perceived Challenges Facing ODL Students

Of the 81 participants in the study, 44 (54.3%) agree that financial constraint is the most challenging factor faced by them, as tabulated in the Table 2. This finding is aligned with Ahmad (2018) who discovered that many nurses had grieved the escalating costs related to further education and often prohibitive for them who cannot afford to interrupt work for study. A total of 39 (48.1%) and 33 (40.7%) participants claim that lack of sufficient time for study and the distance from home to the learning centre is part of the challenges. Interestingly, only 5 (16%) of the participants strongly agree that lack of support from family, employer and friends is part of pitfalls in ODL. Of the 81 participants, 4 (4.9%) strongly agree that conflicts between family, work and study schedule remain as the challenges for ODL students. These findings indicate that, to some minority of the students, personal factors remain as a strong supportive element throughout their journey as ODL students. Hence, our findings support the existing literature by Yee et al. (2016) who emphasizes that personal factors no longer play the important role among ODL students. As adult learners, higher degree of flexibility in learning is the paramount in their effort to juggle with family, work and personal. Thus, issues of convenient in any time, any place and own pace will be the adult learners' centre of debate (Dzakiria, Idrus, & Atan, 2005; Brown, Hughes, Keppell, Hard, & Smith, 2015). Separately, in relation to difficulties in learning technically demanding materials, most of them remain neutral 38 (48.1%). For BNS programme, the only so called "learning technically" are engagement with the e-tutors for asynchronous forum discussions and live-forums in real time. One of the reasons could be due to non-compulsory of their participants in e-forum discussions.

Table 2: Perceived Challenges Facing ODL Students

Variables		Total N = 81 N(%)
Lack of sufficient time for study	Disagree	7(8.6)
	Neutral	22(27.2)
	Agree	39(48.1)
	Strongly Agree	12(14.8)
	Missing	1
Distance from home to the learning centre	Disagree	8(9.9)
	Neutral	28(34.6)
	Agree	33(40.7)
	Strongly Agree	10(12.3)
	Missing	2
Financial constraints	Strongly Disagree	1(1.2)
	Disagree	6(7.4)
	Neutral	20(24.7)
	Agree	44(54.3)
	Strongly Agree	7(8.6)
	Missing	3
Lack of support from family, employer, friends, etc.	Strongly Disagree	9(11.1)
	Disagree	30(37)
	Neutral	21(25.9)
	Agree	15(18.5)
	Strongly Agree	5(6.2)
	Missing	1
Unfavourable home learning environment	Strongly Disagree	5(6.2)
	Disagree	20(24.7)
	Neutral	28(34.6)
	Agree	24(29.6)
	Strongly Agree	2(2.5)
	Missing	2
Difficulties in learning technically demanding materials	Strongly Disagree	2(2.5)
	Disagree	13(16)
	Neutral	39(48.1)
	Agree	22(27.2)
	Strongly Agree	3(3.7)
	Missing	2

Lack of experience and/or training with instructional technologies	Strongly Disagree	2(2.5)
	Disagree	11(13.6)
	Neutral	37(45.7)
	Agree	28(34.6)
	Strongly Agree	2(2.5)
	Missing	1
Conflicts between family/work and study schedule	Strongly Disagree	11(13.6)
	Disagree	17(21)
	Neutral	21(25.9)
	Agree	27(33.3)
	Strongly Agree	4(4.9)
	Missing	1

Instructional Related Challenges

Table 3 illustrates the findings of instructional related challenges among ODL students. Of the 81 participants in the survey, 33 (40.7%) disagree of difficulty in attending face-to-face sessions due to distance. This finding is contrast with the above (in Table 2) result whereby 33 (40.7%) actually agree that distance from home to learning centre is part of the challenge as ODL students. Coincidentally, both variables report same number and percentage. Further investigation in future study needs to examine whether or not those are the same participants. In relation to poor / inappropriate course material design and inappropriate/inconvenience form of learning materials, the participants disagree with the statements, which are 38 (46.9%) and 33 (40.7%) respectively. Conversely, Bisciglia and Monk-Turner (2002) reported that students in their study did not receive all the study material in time to complete their assignments, and indicated that there was a lack of teaching and learning resources in the off-campus which put them in distress. Several publications have suggested that ODL with blended learning will contribute to better learning performance, positive learning experiences, and better self-direction in professional learning (Legg, Adelman, Mueller, & Levitt, 2009; Melrose & Bergeron, 2007; Hsu & Hsieh, 2011). Good information system through technology will provide good students support, be it online discussion, tutor’s feedback, conference, online grading or e-library, are core elements of ODL mode. Nevertheless, questions regarding clinical placement is not favourable to conclude any findings.

Table 3: Instructional Related Challenges

Variables		Total N = 81 N(%)
Difficulty in attending face-to-face sessions due to distance	Strongly Disagree	4(4.9)
	Disagree	33(40.7)
	Neutral	26(32.1)
	Agree	12(14.8)
	Strongly Agree	5(6.2)
	Missing	1
Difficulty in attending clinical practice due to unfavorable schedule	Strongly Disagree	4(4.9)
	Disagree	25(30.9)
	Neutral	27(33.3)
	Agree	22(27.2)
	Strongly Agree	3(3.7)
	Missing	0

Limited opportunities for hands-on during clinical placement due to healthcare institutional policy	Strongly Disagree Disagree Neutral Agree Strongly Agree Missing	6(7.4) 24(29.6) 30(37) 17(21) 2(2.5) 2
Lack of tutors'/facilitators'/local preceptors' contact and inadequate academic support	Strongly Disagree Disagree Neutral Agree Strongly Agree Missing	8(9.9) 31(38.3) 27(33.3) 12(14.8) 2(2.5) 1
Poor / inappropriate course material design	Strongly Disagree Disagree Neutral Agree Strongly Agree Missing	2(2.5) 38(46.9) 27(33.3) 10(12.3) 4(4.9) 1
Inappropriate/inconvenience form of learning materials	Strongly Disagree Disagree Neutral Agree Strongly Agree Missing	3(3.7) 33(40.7) 31(38.3) 11(13.6) 3(3.7) 0
Unhelpful course information and lack of direction	Strongly Disagree Disagree Neutral Agree Strongly Agree Missing	4(4.9) 42(51.9) 24(29.6) 8(9.9) 3(3.7) 0
Delayed / ineffective feedback from the tutors/facilitators/ local preceptors	Strongly Disagree Disagree Neutral Agree Strongly Agree Missing	6(7.4) 39(48.1) 27(33.3) 5(6.2) 4(4.9) 0

Institutional Related Challenges

In relation to institutional related challenges, 32 (39.5%) and 34 (42%) prefer to be neutral when ask about whether lack of appropriate advice provided by students services support, and lack of an effective institutional network of technical assistance are part of the institutional related challenges (Table 4). Probably this group of students do not reach out for the students services support and technical assistance provided by the university, as appose to 30 (37%) report disagree with lack of appropriate advice provided under the umbrella of students services support, and 28 (34.6%) disagree with lack of an effective institutional network of technical assistance are part of the institutional related challenges.

Table 4: Institutional Related Challenges

Variables		Total N = 81 N(%)
Delayed study materials at learning centers	Strongly Disagree	5(6.2)
	Disagree	34(42)
	Neutral	29(35.8)
	Agree	8(9.9)
	Strongly Agree	4(4.9)
	Missing	1
Difficulty in administrative services such as registering and paying fees	Strongly Disagree	6(7.4)
	Disagree	35(43.2)
	Neutral	26(32.1)
	Agree	13(16)
	Strongly Agree	1(1.2)
	Missing	0
Lack of appropriate advice provided under the umbrella of students services support	Strongly Disagree	4(4.9)
	Disagree	30(37)
	Neutral	32(39.5)
	Agree	14(17.3)
	Missing	1
	Lack of an effective institutional network of technical assistance	Strongly Disagree
Disagree		28(34.6)
Neutral		34(42)
Agree		13(16)
Strongly Agree		1(1.2)
Missing		0
Lack of responsiveness from learning centre/headquarter administrative staff	Strongly Disagree	8(9.9)
	Disagree	31(38.3)
	Neutral	31(38.3)
	Agree	9(11.1)
	Strongly Agree	2(2.5)
	Missing	0
Lack/delayed of important information	Strongly Disagree	6(7.4)
	Disagree	38(46.9)
	Neutral	24(29.6)
	Agree	12(14.8)
	Strongly Agree	1(1.2)
	Missing	0

CONCLUSION

This preliminary descriptive study employed quantitative approach by using close-ended questionnaires to examine perceived challenges in ODL among under-graduate nursing students undertaking BNS program of OUM from five learning centers. Students' judgments on ODL for continuing education are the prime issue that leads to their further perceptions on challenges in ODL. 59.3% of 81 students participated in this study perceived ODL is convenient and self-paced learning. Hence, their perceived challenges were examined further in three different areas; academic/personal, instructional, and institutional supports. This study gives insight to nursing students of OUM and their perceived challenges dictate the significant influence to the strengths and limitations of implementing ODL, in particular the BNS programme. May be it would be interesting and beneficial to compare learning experiences and perceived challenges of other BNS students from other learning centers. In essence, a better understanding of students' perceptions and judgment on ODL will shed some lights into nursing education challenges and the strategies required to enhance the implementation of ODL.

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PSYCHOLOGICAL CONTRACTS OF UNIVERSITY STUDENTS: A CASE OF STUDENTS OF ACCRA TECHNICAL UNIVERSITY, (Dept. of Management and Public Administration)

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ABSTRACT

The literature on psychological contracts in organisational contexts is quite large and keeps growing more and more in recent times, however, when it comes to higher educational settings, there seem to be very little work done. Psychological contract is a set of unwritten mutual expectations, perceptions, and informal obligations between two parties. The study investigated the psychological contract between lecturers and students of the Department of Management and Public Administration of Accra Technical University, Ghana. Two separate groups of students were used for the study. One group comprised 1st year students who had freshly been admitted into the university and 2nd year students representing continuing students. An exploratory study was used to provide qualitative empirical evidence on the ways in which these groups of students perceived their psychological contract. The results showed that students' learning enthusiasm was promoted by lecturers performing their desired behaviour, while students' learning initiative and efficiency is damaged when lecturers' desired behaviour is unfavourable. Also, the findings show that students' psychological contracts are quite different from that of employees in an organisation and a breach in their psychological contract may not necessarily affect performance negatively but may affect their propensity to make referrals for new admissions into the university and again, they may refuse to do voluntary work or lose interest in giving back to the school. One major implication of the findings is that most students tend to manage breaches in their psychological contract quite well due to their aspirations in securing good jobs after their time in the university. However, steps must be taken to meet them from time to time for discussions of some these pertinent issues.

Keywords: *Psychological contract, Academic and Student, University, Social Exchange*

INTRODUCTION

Students enroll in various universities with high expectations of furthering their education and becoming important personalities in future. Those of the Department of Management and Public Administration are no exception. This, notwithstanding, they do encounter a number of exchanges during their stay on campus. While some of these expectations may be met, a lot remain unfulfilled.

Although it goes without saying that students come to the university to study, and the university has the obligation to provide learning outcomes, there still remains those unwritten expectations from both sides which are unvoiced and yet play a big role in influencing the students' studies and the academic's propensity to teach and this is what is termed the psychological contract. As purported by Belcourt et al (2010), while the psychological contract is not a legal mandate, and, therefore, may not be strictly enforced, depending on the underlying relationship between the two parties, one may hold the other to it as required by common law.

Problem Statement

There has been previous studies on student-related psychological contract by Koskina (2015), Knapp (2017) and Bordia et al. (2018) among others. However, this study seeks to find out if their findings could be generalized to students in this department or whether our students have differing ideas on their psychological contracts. The paper, therefore, determined that students have important education-related psychological contracts with various parties such as their fellow students, their lecturers and the university as a whole. The fact that one is a student should mean that that person is prepared to study. However, the behavior and failure rate of some students portray that they either do not set their priorities right or something else may be the cause and, therefore, this study seeks to find answers to what mitigates students learning responsibilities.

Another area of interest to this researcher is the methodology previously used by most researchers. Conway & Briner (2012) have opined that there is very little qualitative research in the field of psychological contract and again Coyle-Shapiro & Shore (2013) have also purported that the most appropriate methodology to examine the psychological contract is qualitative. This, therefore is one of the gaps that this study seeks to fill. The psychological contract can be used as a powerful explanatory concept (Guest, 1988, p. 649) and it is no wonder that it has recently been used to understand and manage relationships in the education sector.

Objectives of the Study

The main objective is on how the psychological contract of both students and their lecturers can affect the teaching and learning experience.

In order to achieve this main objective the following specific objectives (ROs) were generated:

- RO1. To explore the expectations of first year students of the Department of Management and Public Administration (DMPA) of their lecturers within the pedagogic relationship.
- RO2. To explore how these expectations changed over the first year.
- RO3. To explore the implications of differences between the PC of students and that of lecturers.

RESEARCH DESIGN AND METHODOLOGY

The research method used in the study was purely qualitative. Rousseau (2015) purports that a ‘more descriptive qualitative assessment of individual psychological contracts is needed to better understand the potentially distinct perspectives’. The study considered Accra Technical University for the purposes of convenience. A total sample of 207 was used and 189 survey responses were received.

Two groups of students were interviewed in this study. The first group were first year students who had just entered the university and the second group was second year students who had been in the university for more than one year. The researcher believed that using these two groups would be useful to compare their responses after they had experienced university for a number of months, at least.

DATA ANALYSIS AND FINDINGS

What Does it Mean to be a Student?

When first year students were asked what it means to be a student, some of the responses were, “that they have to take their studies seriously and listen to every instruction by their lecturers and university authorities”. Other students also indicated that “as students they have to do independent work by researching and making references from journals, articles etc.”

Some of the students also acknowledged that “*attendance and punctuality were important*” although there was an impression that first years may not have 100% attendance due to late admissions and also getting acclimatized to their new environment.

On the part of the second years, perception was a little different. The study discovered that over the period of one academic year, the psychological contract of continuing students changed remarkably. The role had grown in size and complexity. Something more was required to be a successful student: “*they must show more interest, have their own ideas and thoughts that they can build opinions off what they’ve learnt, be able to essentially argue the point a little bit more, and show that they’re actually keen to learn*”.

Diversity of the Student Body

When the researcher sought to know the individual differences of students in terms of diversity, the study revealed that, all the respondents were aware that as individuals, they had differences in their strengths and weaknesses. Insecurity was common across the first year students and they expected their lecturers to understand them and how fast or slow they are at grasping a concept. “Not everyone is at the same level when they come to university; we’ve all got different knowledge and stuff”. This recognition, that all students were not the same, brought about an expectation from some students that academics are obliged to acknowledge this and act accordingly.

Pre-entry Expectations

Most students came into the university with the expectation that things were going to continue as they were in the secondary schools. The interviews revealed that they needed to be constantly reminded of deadlines in submitting assignments and other university activities but they realized that the relationship was very ‘hands off,’ and required that they be more independent.

Entry Experiences

Among the first years who were interviewed on their pre-entry experiences in the university, accessibility to lecturers was key, and so was the expectation to be ‘spoon-fed’. Some of the respondents indicated that, *“they expect their role to be similar or better than that of our previous teachers who were more accessible”*. However some students commented on experiences they have had from some of their lecturers which suggested that *“it’s totally different”*.

In the interview with the second year students, the response was expressed negatively regarding the role of academics. *“They don’t explain anything, they just say, ‘check the answers’, ‘go to the library or internet’ and expect you to go through fully, as, like, if you didn’t understand the question, I’d expect them to, like, show you every single bit, as in the secondary school they would. Now they don’t”*.

Experiences of Learning

The main reason why students want a university degree is to learn in order to better their lives: *“I want to learn, I’m here to learn”* so that *“I can get a good degree”*. On the part of the second years, all the respondents believed, learning could not be done without an was something done to them by someone else *“who should actually teach me something that I didn’t know and they should have a greater knowledge in it so that I can benefit”*.

Post-entry Experiences

As students become accustomed to university and their new environment, the sense-making process helps them to further understand, interpret and respond to the pedagogical relationship. This process can help the new students bring their expectations in line with their experiences (Louis, 1980). It is during this period of sense-making and socialisation that students redefine what they expect from their academics in terms of the pedagogic relationship. Thus students dynamically make sense of their psychological contract based upon their lived experiences (De Vos *et al.*, 2003).

Differences in Students

Students also became aware of their relationships with other students as a means to improve their learning, “getting their [other students] opinions on something, it can broaden your mind” and how “we kind of teach each other”. However many of the student participants had been disappointed and “annoyed” with the learning relationships which had developed with other students especially during group assignments and saw their lack of effort as something which could ultimately impact upon their results.

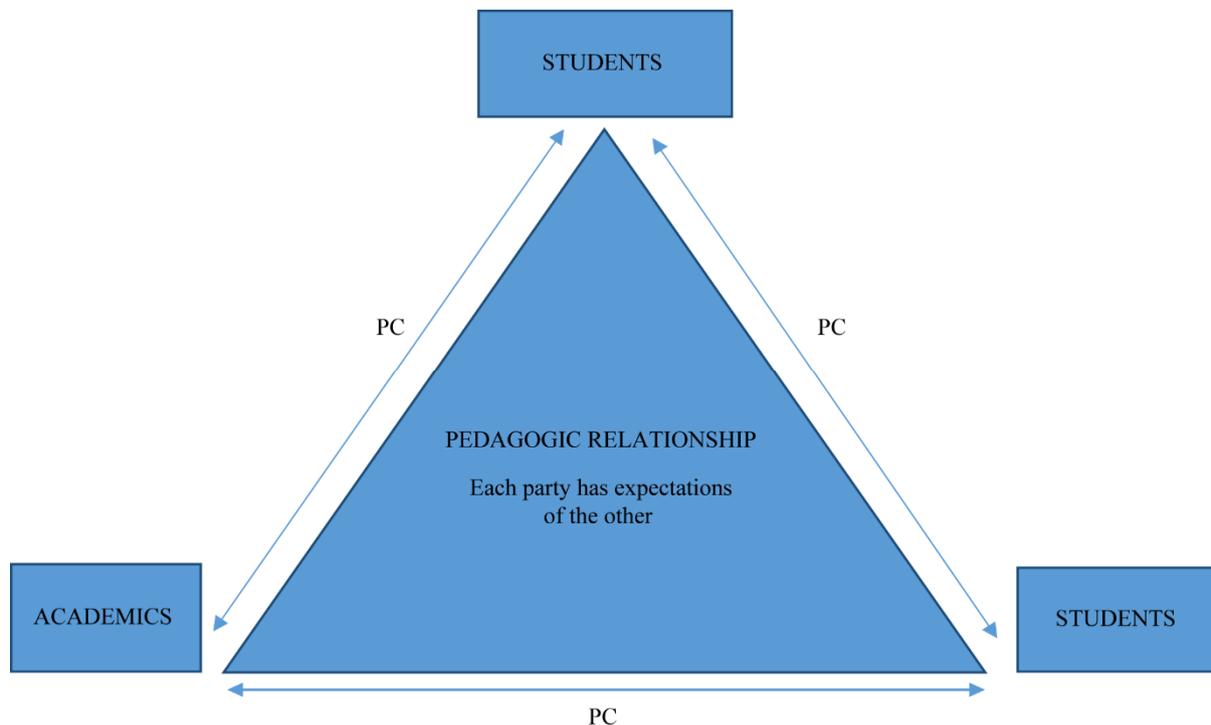


Figure 1: Student-Academic Triad Psychological Contracts

The triad suggests that students also have implicit expectations of other students, as team members, just like they have of their academics, and feel obligated to them, reflecting a multiplicity of psychological contracts within the pedagogic relationship as depicted in Figure 1.

Size

One theme which was mentioned extensively as a barrier to an effective pedagogic relationship was the size of the faculty and the numbers of students on a programme. Mass lectures made students feel “pretty lost” and reduced the opportunity for relationships to develop between the lecturer and the student. In the interview, other challenges like the inadequacy of lecture room furniture and lack of microphones were mentioned. Future studies in this area is highly recommended.

Concerns for the Future

One of the reasons why a supportive and proactive lecturer was so important to students was because of their concerns for the future. Most of these students had high aspirations and expected to be top-notch in their fields. As such they are similar to those students that Bordia *et al.* (2010) refer to as high in “conscientiousness” and have higher performance expectancies, requiring from others at least as much as they are willing to give to a process.

Students revealed that their successful completion of a good degree depends upon a lot of factors which “make them want to work harder, knowing that they will need to get good jobs afterwards” but they also expected academics to provide the toolkit to help them achieve.

Breach

The main antecedents cited by the participants for not meeting their expectations can be seen in Table 1. There is much consistency in the reasons across both the first and second year students. It would appear that there are three main causes of breach; those occurring when students do not feel supported in their role by their lecturers, those when students do not feel that lecturers are performing as their role obligates them to *i.e.* to be able to teach effectively, and those that occur when the student compares their deal unfavourably with that of other students elsewhere and perceive inequity.

Table 1: Causes and Outcomes of Breach

Causes of Breach	
First Year	Second Year
Incompetence as a teaching professional (including materials and engagement) Poor attendance (and punctuality) Lack of support/guidance Lack of feedback Lack of respect Lack of preparation	Not professional and make mistakes (linked to exams and assessment) Inconsistency in marking Lack of support/guidance (linked to assessment) Lack of feedback Lack of commitment and effort and being there When I have tried and you do not give support Other students' actions
Outcomes	
Behavioural Outcomes	
Do not Attend Less Effort	Do not Attend Less Effort
Emotional Outcomes	
Anxiety/Worry/Stress Annoyance Lost and Confused Frustration Disappointment What about the money?	Annoyance Zoned Out Frustration Disappointment Irritation Becomes a personal issue

Some students clearly had explicit expectations that support and guidance would be given due to the messages of ‘open door policy’ they had received during orientation. There does appear also to be a discrepancy in what students perceived as *being given* support and what academics see as *providing* support. Students want things “explained”, they want their “work checked” and want “formative feedback” and they “want the opportunity to discuss” their dilemmas.

DISCUSSION

First Year Management & Public Adm Students' Expectations of Their Lecturers (RO1)

One of the outcomes of this study is that both students and lecturers have high and positive psychological contracts towards each other. However, the line of departure occurs due to the fact that expectations are mostly unvoiced and, therefore, as Guest (2010) puts it, it is like two blindfolds groping in the dark, trying to find each other. The students are however, of the opinion that if they are offered more support and guidance they would be motivated to put extra effort into their work.

How Student Expectations of the Relationship Change Over the First Year (RO2)

This study has also shown that students' and lecturers' expectations can, and do change. Students' perceptions of lecturers' obligations changed mainly due to the acquisition of socialisation knowledge which influenced their perceptions of academics' obligations; this supports findings from employment PC literature (Jephcote, Salisbury & Rees, 2008).

However, an remarkable discovery was that of the impact of assessment on student expectations and their subsequent experience. All of the students interviewed complained of how stressful examination periods were so that if lecturers could take steps to lessen their anxiety in preparation for assessment. This is something which develops as a concern over a period of time and can have a negative impact upon their experience. For example, when students were first asked what their expectations were, 'general reading of drafts' had not been expected but preferred focused reading where they will be given specific areas to read for assessment.

The Implications of Differences between Academics' and Students' Expectations (RO3)

The findings also present some evidence to suggest that, for some students, when they first arrived at university they become trapped in a liminal space (Land & Rattray, 2014), where they are met with new demands, such as the need to be more independent in their learning, to which they struggle to adapt. This is perhaps because academics and students perceive independent learning in different ways with students seeing it as simply the need to be more organised and work unsupervised whilst academics perceive the need for students to be more proactive and in control of their learning responsibilities.

Breach and feelings of violation do occur for both academics and students with emotional and behavioural consequences. The consequences of breach on the academic's PC was mitigated by their ideological commitments to their professional status and mainly resulted in dissatisfaction and disappointment, supporting Rolfe's (2002) findings.

Students were aware and took into consideration mitigating factors which perhaps prevented academics from meeting their expectations, for example the size of lectures and the number of students in group presentations. This, notwithstanding, all students clearly implied that it was their relationship with the academic which impacted upon their university experiences the most. This is in agreement with Koskina (2011) who found that students regarded academics as the key party in the exchange relationship.

CONCLUSION

It has been concluded that some students perceived they had few expectations when they first get admitted into the university concerning their relationship with lecturers; however they do have implicit expectations, as demonstrated in their responses in the interviews e.g. the quality of their lecture halls, the ambiance and other logistics which will make their studies more comfortable than what they experienced in secondary school.

As fresh students their experiences inform their expectations of the new pedagogic relationship and it is through this cognitive schema that some expectations are met and/or unmet. The array of these met/unmet expectations may be wide depending on their significance (intensity) to the student.

But continuing students are able to assess and reflect upon whether their expectations have been met or breached. In contrast, breach of their expectations can lead to negative emotional reactions and a negative experience, although the extent of the negative experience depends upon how the academic subsequently reacts and the state of the relationship which existed between them.

Also, the findings show that students' psychological contracts are quite different from that of employees in an organization. A breach in their psychological contract may not necessarily affect their academic performance negatively but may affect their propensity to make referrals for new admissions into the university and again, they may refuse to do voluntary work or, altogether, lose interest in giving back to the university. The overarching implication of these findings is that most students tend to manage their psychological contract based on the understanding that it is their life and they must make the best of it in order to get a good job after their studies in the university.

Finally, this study concludes that concerning student-lecturer relationship, regardless of their geographical locations, students have similar expectations of their academics and this is consistent with previous studies.

RECOMMENDATIONS

It is important to understanding what students expect from the university as a whole, and this provides useful evidence for informing institutional policies, procedures and curriculum planning.

It is recommended that academics should extend more support and guidance to students by providing them with knowledge and information to help them improve on their academic performance. This is also consistent with the findings of Koskina (2011) which recommended that existing outreach programmes within the university are informed by the result of the study to provide students with experience and information of guidance and assessment and the level of support to be anticipated.

The findings suggest that, as the content of the exchange with the academic becomes more known to students, expectations change and there is a need, therefore, for further activities where expectations of students and academics at these different time periods can be shared so that implicit expectations can become more explicit.

Since students' PC is bound to change as they progress, it is recommended that academics should be more flexible to understand such occurrences

It would be very necessary to provide opportunities for students and academics to meet from time to time and discuss their development needs in delivering their respective curricula so that students are able to effectively make a smooth transition into the university and the most of their learning experiences.

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SHAPING FUTURES OF PRISON INMATES AND FORMER PRISONERS VIA HIGHER EDUCATION: A CONCEPTUAL STUDY ON SOCIAL RETURN ON INVESTMENT ASSESSMENT FOR STAKEHOLDERS

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ABSTRACT

Companies largely play a role in corporate social responsibility (CSR) programmes by engaging with stakeholders including employees, customers, investors, communities and suppliers for financial, environmental and/or social impacts. Contribution quantum is rarely assessed or calculated when it concerns CSR as it is explicitly recognised as the willingness of an organisation to contribute to the community within the ethical norms of charity although strategically CSR can increase revenues by decreasing risks and costs. This study highlights the unique contributions of various stakeholders who wish to make positive and sustainable impact on the socially challenged community – the prisoners. One such engagement is the provision of undergraduate and postgraduate programmes for prisoners in selected Malaysian prisons by Open University Malaysia (OUM), with the partnership of the Prisons Department of Malaysia. It is an economic empowerment programme to rehabilitate and educate its inmates and create employment opportunities if and when they are released. Social Return On Investment (SROI) is a method for measuring and communicating values that incorporates social, environmental and economic impacts to stakeholders. It is an accounting of value created by the activities and the contributions that made the activity possible. Results will be expressed in a ratio of total benefits (a sum of all the outcomes) to total investments (a sum of all costs involved). The purpose of this conceptual study is to calculate the ratio of Ringgit Malaysia (RM) of social value created for every RM1 spent on its activities. Inmates who are accepted into OUM's programmes attend face-to-face tutorials conducted by OUM tutors and sit for examinations in the prison. They are supported by OUM's online learning management system where they manage their studies, submit their assignments and access the digital library.

Keywords: *Access to Education, Open and Distance Learning, Social Return On Investment*

INTRODUCTION

The Malaysian government has permitted the Department of Prisons to start tertiary education for prisoners in an effort to provide tertiary education to prison inmates and equip them with knowledge and skills to pursue work after their release. OUM is the authorised tertiary education provider in these prisons where it conducts undergraduate and postgraduate degree programmes for inmates. A total of 67 respondents comprising 63 prisoners and 4 ex-inmates are involved in this programme. This study aims to calculate the ratio of Ringgit Malaysia (RM) of social value created for every RM1 spent on tertiary education programmes in prisons in Malaysia using the Social Return on Investment (SROI) method. OUM and the Prisons Department and all other stakeholders will be able to put a RM value to this CSR programme. For example, a ratio of 10:1 indicates that an investment of RM1 delivers RM10 of social value. SROI contains more information than the ROI, which is the financial measure. SROI helps us to understand how change is being created by evaluating social, environmental and economic outcomes. Change here refers to the change produced by the CSR programme in terms of relevance to stakeholders; ie the people or organisations that experience or contribute to it. OUM and other stakeholders can now measure, understand and communicate the value of this CSR programme.

Problem Statement

Former prisoners' education and the extent and nature of previous work experience should be the main predictors of post-release employment outcomes as these indicators of human capital are important criteria for employers seeking valuable and dependable workers (Sabol, 2007; Western, 2007). Some individuals exiting prison may find work with previous employers or in occupations that require few skills or limited customer contact (Holzer et al., 2007). Holzer and his colleagues (2004; Holzer, Raphael, & Stoll 2006a, 2006b) have used employer survey data to analyse employers' decisions to hire individuals with criminal records. In employer surveys administered to over 3,000 employers in the United States of America, roughly 60% of employers would "probably not" hire applicants with criminal records.

Given that most incarcerated people will eventually re-join society, prison education is a great way to rehabilitate and prepare them for life after their release. If an inmate leaves with the same skills he had before entering prison, it is highly likely that he will take up his old law-breaking activities. This is something we must think about in ensuring that higher education is truly available for all, even to those confined within prison walls.

Provide an integrated rehabilitation programme to all residents on the basis of the Human Development Plan of the Prison Department.

~ Cited from Malaysia's Prison Department's Charter

By giving education to the inmates, you are protecting your own civilization, your own society. The fewer people you have running around with no hope, no education, no means of support and no reason to feel proud of themselves, the lower the risk to you: both to your values and to your stuff. You do not have to be a bleeding heart liberal to see that.

~ Cited from Psychology Today

Inmates who are accepted into OUM's programmes attend face-to-face tutorials conducted by OUM tutors in the prison. It is an economic empowerment programme to rehabilitate and educate its inmates and create employment opportunities if and when they are released. The social return on investment (SROI) in these programmes will be assessed and evaluated.

This study highlights the unique contributions of various stakeholders who wish to make positive and sustainable impact on the socially challenged community: the prisoners. The prison authorities, Open University Malaysia and its tutors, the government of Malaysia, parents and families of inmates and ex-inmates are the stakeholders investigated. The study specifically analyses the social value, environmental value and economic impact gained as a result of providing tertiary education to prison inmates. Results are expressed in a ratio of total benefits (a sum of all the outcomes) to total investments (a sum of all costs involved). The types of changes as well as value of changes (financial and non-financial) from the perspective of stakeholders will be measured to determine its social return on investment (SROI).

Research Objectives

The problem statement can be analysed through the following research objectives. The objectives of this study are:

- RO1) To determine the SROI for stakeholders (OUM, Prison Department, inmates, ex-inmates and their families).
- RO2) To assess whether prison inmates find tertiary education programmes offered in prison relevant to them.
- RO3) To evaluate the impact of offering tertiary education programmes in prison towards stakeholders (including university heads and tutors, prison heads, inmates, ex-inmates and their families).

Research Questions

- RQ1) What is the SROI for stakeholders (OUM, Prison Department, inmates and ex-inmates and their families)?
- RQ2) Are tertiary education programme offered in prison relevant to prison inmates?
- RQ3) What is the impact of offering tertiary education programme in prison towards stakeholders (including university heads and tutors, prison heads, inmates, ex-inmates, and their families)?

LITERATURE REVIEW

According to Mandela Rules of Education and Recreation Rule 104, provision shall be made for the further education of all prisoners capable of profiting thereby, including religious instruction in the countries where this is possible. The education on illiterate prisoners and young prisoners shall be compulsory and special attention shall be paid to it by the prison administration.

So far as practicable, the education of prisoners shall be integrated with the educational system of the country so that after their release they may continue their education without difficulty. Based on National Education Policy of Malaysia, democratization of education policy is set by the Ministry of Education and “Education for All” as championed by UNESCO. As enshrined in regulations 151 (1) and (3), Prisons regulations 2000, educational services to inmates is an obligation which must be fulfilled by the prison authorities.

The Department of Justice in Malaysia is entrusted with the responsibility of maintaining justice according to the Malaysian constitution and legal system. Offenders of this system face legal action. They are tried under the legal system and if found guilty they are placed in prison to serve a term/sentence which depends on level of offence. The Department of Prisons is tasked with enforcing punitive measures prescribed for each prison inmate. In this process, prisoners are provided with accommodation, food, medical attention and other facilities for general upkeep that costs the government annual funds to manage a prison and maintain prison inmates.

This involves:

- (a) Compensation, benefits and rewards to all prison employees, police force and Department of Justice personnel.
- (b) Expenses covering accommodation, food, medical facilities, uniform and related items used by prisoners.
- (c) Utility expenses for the entire prison system.
- (d) Cost of administration and recordkeeping.
- (e) Transport cost.
- (f) Cost of psychiatric help and welfare of inmates.
- (g) Religion and related activities.
- (h) Cost of security provision (24/7, 365 days a year)

When prison inmates are released, they return back to society. If they are unable to secure a legally valid and reliable livelihood, there is a high possibility that they may return to a life of crime. In this case, they will be rearrested and placed in prison.

The objective of enforcing punitive action is to deter offenders from repeating offences and returning to a life of crime. However, prison inmates who are unable to secure proper employment or a means of living after release often return to a life of crime. They later become prison inmates as repeat offenders. This has evolved into a vicious cycle. In order to reduce the number of repeat offenders, the government (through OUM) has started tertiary education programmes aimed at upskilling prison inmates and providing them with sufficient knowledge so that they may be better equipped to secure proper employment or become entrepreneurs. This enables them to seek a legally permissible livelihood for themselves and their family. Education benefits individuals impacted by incarceration, and that makes society safer. By allowing people who want to turn their lives around the opportunity to do so, we all profit (Kunen, 2017). It may serve to reduce repeat offenders. If so, the financial strain of operating and maintaining a prison and associated legal personnel can be significantly reduced. While investing in prison education programmes will require upfront funding, the long-term economic benefits for states and localities are considerable as for every dollar (USD) spent on prison education, taxpayers are estimated to save four to five dollars (USD) that have been spent on incarceration (Bender, 2018). This is because when the inmates (or ex-inmates) have the academic qualification, they are to be competitive in the job market and this will spur economic activity and productivity.

Figure 1 depicts the unique partnership between OUM and the Malaysian Prisons Department. It provides a greater understanding of how change can be created by working closely through formal arrangement in which both parties cooperate to share skills, learning material, technology and other resources. This strategic and innovative partnership leverages on the principles of lifelong learning. Lasting partnership is aspired to be achieved later through collaborations with a range of extraordinary partners, including the local communities, business conglomerates and individual donors.

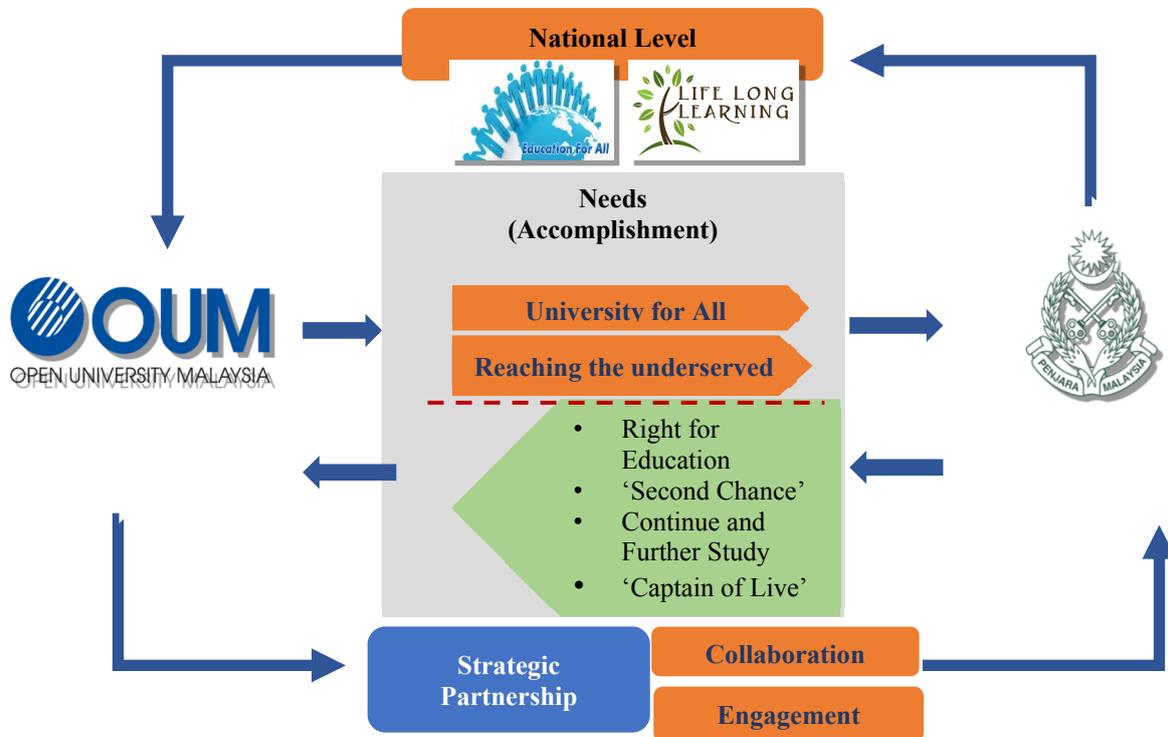


Figure 1: Conceptual Framework of Partnership between OUM and the Malaysian Prisons Department

This study seeks to measure the social return on investing in tertiary education for prison inmates. It seeks to analyse the benefits and costs of operating tertiary education programme in prison. It seeks to evaluate the effectiveness of tertiary education programmes in prisons in Malaysia through the Social Return on Investment (SROI). SROI is a method for measuring and communicating value based on 2015 MIM-KAS University Corporate Social Responsibility Programme Manual from Malaysian Institute of Management (MIM) in alliance with Konrad-Adenauer-Stiftung (KAS) that incorporates social, environmental and economic impacts to stakeholders. It is an accounting of value created by the activities and the contributions that made the activity possible. SROI has been the selected form of measurement as it enables this research to achieve an enhanced evaluation of effectiveness. It provides a greater understanding of how change can be created by evaluating social, environmental and economic outcomes. It generates a ratio of total benefits (a sum of all the outcomes) to total investments.

The SROI analysis is useful for strategic planning. It provides information for all stakeholders. It serves as a method of assessing the performance of an investment against its objectives. SROI reveals the legible financial and non-financial benefits as well as less legible opportunity costs (if tertiary education was not provided to prison inmates) so that investors/fund providers may obtain a holistic view and enhanced understanding about the value of providing tertiary education programme in prisons.

METHODOLOGY

The research design enables the researchers to come up with solutions to the problems and guides the researchers in the various stages of the research. In this research the cross-sectional design type is chosen. This is the most predominant design used in social sciences. Data will be collected by a combination of quantitative and qualitative methods. The quantitative method comprises questionnaires and the qualitative method comprises interviews to respondents (including inmates, ex-inmates, their families, prison heads, university heads and tutors). As such the study will utilise triangulation methods.

In this research the sampling design uses cluster sampling under probability sampling technique. This cluster sampling is to ensure that different groups in the population are adequately represented in the sample to increase their level of accuracy when estimating the parameters. The main idea in cluster sampling is to use available information on the population 'to divide it into groups such as the elements within each group are more alike than are the elements in the population as a whole' (Nachmias & Nachmias, 1996). A total of 68 inmates have registered for OUM programmes since 2008. From this number, 12 have successfully graduated, where a few of them continued their studies to higher levels. 20 students decided to be dormant and stopped pursuing their studies and 2 have quit. Programmes pursued are the Diploma in Management (DIM), Bachelor in Business Administration (Hons) (BBA), Bachelor of Political Science (BPS), Bachelor in Information Technology (Hons) (BIT), Masters in Business Administration (MBA) and Doctor of Philosophy in Business Administration (PhD BA). The selected prisons are in Kajang in the state of Selangor, Bentong in the state of Pahang and Kota Kinabalu in Sabah.

The breakdown is as follows:

- (a) 32 active learners (of which 3 are former graduates) and 9 graduates and 17 dormant learners and 2 learners who quit from Kajang Prison.

They consist of DIM, BBA, BPS, BIT, MBA and PhD BA learners and graduates.

- (b) 1 active learner from Bentong Prison in the BBA programme (Incidentally the only female learner).

- (c) 3 active and 3 dormant learners from Kota Kinabalu Prison in the DIM programme.

The research instrument is a cross-sectional self-administrated questionnaire which will be distributed to the respondents in the form of survey from April-July 2019 using scale points. This research also uses structured interview as a method to obtain accurate and maximum amount of information from the participants which can be otherwise unavailable. An interview is a purposeful exchange of ideas, the answering of questions and a 'conversation with a purpose'. Structured interview assists the interviewer to follow a predetermined agenda or questions. This research will seek MIM-KAS's Dr. Geoffrey Williams to review the reliability and validity of the research instruments and to appraise the research outcomes. Dr. Williams has been instrumental in crafting meaningful policies and promoting CSR strategies via MIM-KAS collaborations in Malaysia.

Data will be processed using the formula $\text{Benefits/Cost} = \text{Value of SROI}$ to answer to Research Objective 1. The results will be shown in the form of a ratio of benefits and costs in the operation of this programme. Descriptive analysis and tabulation will be utilised to generate the results for Research Objective 2 and Research Objective 3.

FINDINGS AND DISCUSSION

The findings from this study seek to benefit various stakeholder groups. The government of Malaysia, Department of Justice and Department of Prisons will gain better understanding about the benefit of offering tertiary education in prison. The financial (costs and benefits in monetary terms) and non-financial costs saved (opportunity cost, reduction of workload of existing staff, reduction of cost of recruitment and selection of prospective staff, reduction of anxiety and work related stress, tax savings etc.) will be clearly depicted.

Expected results of this study will benefit prison inmates and former prisoners with a better understanding of how tertiary education and learning skills acquired help them continue further in life with a better standard of living. The tertiary education provided in prison is free and prison inmates receive additional skills (all paid for by the government) such as computer application skills, writing skills, study method skills and competency skills. They gain stronger self-confidence and motivation. Prison inmates receive knowledge which is instrumental in gaining employment at a later stage. The families of prison inmates also benefit from tertiary education in prison as the released inmate is equipped with knowledge to attain better employment and higher salaries. The income generated benefits the whole family (spouse, children, parents and other dependents) and provides higher purchasing power. This economic value stretches through many layers of society and a portion of it accrues back to the government in the form of tax payment.

Lastly, the findings from this study will benefit the academic staff and non-academic staff at OUM who have been instrumental in providing tertiary education to prison inmates. The demands for tertiary education in prisons have generated employment, work opportunities and improvement to open and distance learning programmes. As a result, OUM is able to constantly monitor and upgrade their tertiary education programmes and play a vital role in human capital development. Tertiary education by OUM staff can help transform prison inmates into skilled human capital who are competent and able to contribute to the economy. Tertiary education can successfully achieve greater benefits in positively transforming minds of prison inmates in addition to laws, regulation and punitive measures.

CONCLUSION

This study benefits society at large by being instrumental in transforming prison inmates into law abiding citizens who are better able to serve the economy as educated professionals. Members of the public can face less fear, less offences, less stress and anxiety of confronting repeat offenders. The higher level of safety in the environment will benefit many layers of society. Ideally, SROI value should lead to higher levels of confidence and better acceptance of released inmates back in society.

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STUDENTS ENGAGEMENT IN OPEN UNIVERSITY MALAYSIA GRADUATE CENTRE (OUM GC): DOES INFORMATION SEEKING BEHAVIOUR PLAYS A ROLE?

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ABSTRACT

The objective of this study is to examine the relationships between Information Seeking Behaviour (ISB) and engagement of students in Open University Malaysia Graduate Centre (OUM GC). A literature review was undertaken to develop the instrument. Face-to-face data collection method was adopted. A total of 89 respondents from convenient sampling was analysed to answer the research hypotheses. A factor analysis was performed on the independent variable to manage the items and discover new constructs as a way to contribute to the area of study. The Kaiser Meyer Olkin figure is reported to be 0.77, indicating validity of the model. Cronbach Alpha for all variables are reported to be above 0.70, indicating reliability. There is a relationship between information seeking behaviour and student engagement as designated in the regression model. This paper will also give more information to ODL universities which can help them in their decision making process and ability to allocate resources.

Keywords: Information Searching Behaviour, Learner Engagement, Distance Learning, Prior Experiential Learning, Libraries

INTRODUCTION

The advent of communication technology particularly the Internet has made the learning process more complex and challenging. Information has become abundant and overloaded as most data is available ubiquitously at our fingertips. Seeking information now is not only about whether you are able to retrieve the information, but also the ability to dismiss unrelated information. Hence, Information Seeking Behaviour (ISB) is very important for a success in learning. Weber, Becker & Hillmert (2018) points out that students who consult databases and search engines designed to find academic content in peer-reviewed journals, and use English-language search queries, tend to be more successful in terms of grades.

PROBLEM STATEMENT

Most of students are working adults and their learning mode is in Open & Distance Learning (ODL). The attrition rate to be reported is nearly 30% of first semester students and this is a crucial issue (Santhi, Mohd, Loo & Ariff, 2014). In the study of Singh & Satija (2006), ISB is resulted from the recognition of some needs, perceived by the users, who as a consequence makes demand upon on formal system such as libraries and information centre, or some other person in order to satisfy the perceived need.

Therefore, it is important for OUM to determine the students' usage of information resources in the library, searching skills, library skills, awareness of library resources and services provided, and learners' interaction with librarians in order to identify their level of engagement. The relationship between ISB and its impact towards learners are yet to be explored by the University and this gap is an opportunity for research.

OBJECTIVES OF THE STUDY

The main objective of this study is to examine the relationships between Information Seeking Behaviour (ISB) and learners' engagement of Open University Malaysia Graduate Centre (OUM GC).

The two specific objectives of this investigation are to explore the relationship between:

1. Using library for academics and learners engagement.
2. Using library for leisure and learners engagement.

LITERATURE REVIEW

In the investigation of Fatima & Ahmad (2008), ISB is defined as a set of actions that an individual takes to express information needs, seek information, evaluate and select information, and finally uses the information to satisfy his/her information needs. In learning environment, these actions are motivated to complete various tasks in learning process such as for assignment completion, presentations and examinations. ISB is very much related to information seeking skills. Whitmire (2002) in her research explained that ISB would be different from the faculty and graduate students because their information-seeking skill are not well developed. Student engagement is always related to students themselves, peers, faculties, and support centres. Owen & Dunne (2013) argue that student engagement is used in the same breath as student participation, involvement, commitment, effort, time on task or motivation. It is associated with teamwork, leadership, community or civic engagement, democracy, with partner-ship, co-creation and collaboration. Other than that, it is also related to developing new relationships between staff, students and customers. Student engagement needs commitment from all aspects in an organisation. Fredin, Fuchsteiner & Portz (2015) claim that student engagement is fundamental for student success in any education institution.

One of elements in student satisfaction is student engagement. Martin & Bolliger (2018) argue that student engagement increases student satisfaction, enhances student motivation to learn, reduces the sense of isolation, and improves student performance in online courses. They also added that student engagement in online learning is very significant because online learners seem to have fewer opportunities to be engaged with the institution. Student engagement also very much contributed to student achievement and student retention. As Reyes (2006) states: 'student engagement inside and outside the classroom has been found to contribute to achievement, retention, and increased graduation rates'. Hence, a positive respond from activities such as completing all assignments and tasks, pay attention in all classes, and discussion with teaching staff outside class may result in a positive student engagement toward their study. Collectively, these studies outline a critical role for ISB in student engagement. The conceptual framework for this study is presented in Figure 1 below. Correspondently, a factor analysis will be presented to provide more information to the readers on how this framework was developed in the later part of this paper.

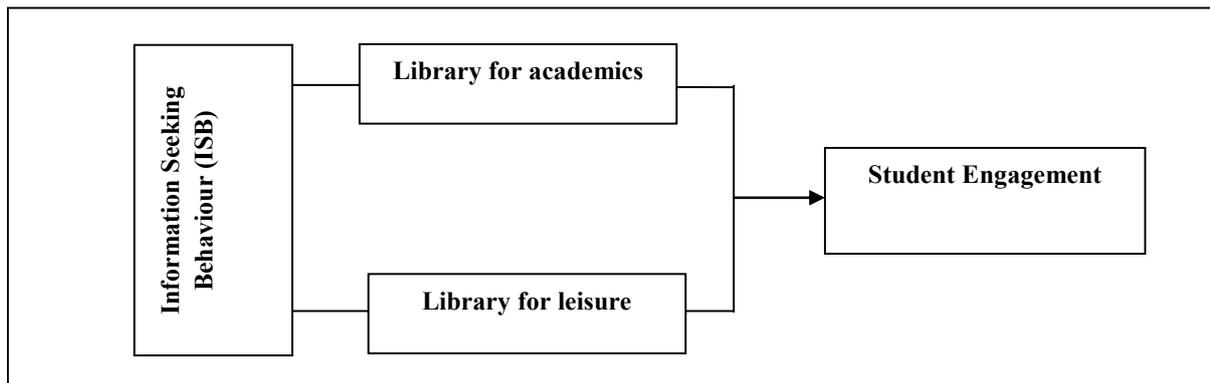


Figure 1: Conceptual Framework

METHODOLOGY

Quantitative design is particularly useful in this study because the main objective is to examine causal relationships between independent variables and dependent variable. The questionnaire consists of three parts namely a) demographic profile b) information seeking behaviour and c) student engagement. In the survey, respondents were requested to rate their responses to the constructs based on the Likert-type scale of 1 to 5; from 1 (strongly disagree) to 5 (strongly agreed). All issues on reliability and validity were primarily resolved. Convenient sampling and face to face data collection methodology were used in this study. Hard copies of the questionnaires were administered to students in the library. The completed questionnaires were collected by the librarians after the tutorial session. They were then collated and hence data were entered, cleaned and analysed using Statistical Package for Social Sciences (SPSS) Version 22.

ANALYSIS & RESULT

Profile of Respondents

This section begins with a demographic overview of the respondents. The total number of respondents was 89 out of 120 questionnaires distributed, which is 74% responses. Based on the finding it reveals that 39% of the respondents are from Master of Counselling (MC) 39% and followed by Master of Business Administration (MBA) 21% participated in the Questionnaires. Majority of the respondents are from the age of 36 to 40 which is 35% and 41 to 55 (33%). 62% of the respondents' current management level is in Middle Management level. It is also revealed that 62% of the respondents never attend any Library Training session (Table 1).

Table 1: Profile of Respondents

Demographic Variables	Percentage (%)
Programme:	
Master of Counselling (MC)	39
Master of Business Administration (MBA)	21
Master of Occupational Health & Safety (MOSHRM)	10
Master of Early Childhood Education (MECHE)	8
Master of Human Resource Management (MHRM)	7
Master of Management (MM)	4
Master of Nursing (MN)	2
Master of Islamic Studies (MIST)	2
Master of Instructional Design (MIDT)	2
Master of English Studies (MEST)	2
Master of Project Management (MPM)	1
PhD Education	1
PhD Science	1
Enrolment:	
Normal Intake	98
APEL Intake	2
Age:	
18–25	2
26–30	14
31–35	12
36–40	35
41–55	33
Above 55	4
Gender:	
Male	37
Female	63
Current level of management:	
Low	18
Middle	62
Top	20
Number of hours access internet per day:	
Less than 1 hour	6
1 to 3 hours	36
4 to 6 hours	34
More than 6 hours	24
Respondents attended at least once Library Training:	
Yes	38
No	62

DATA VALIDITY AND RELIABILITY

Kaiser-Meyer-Olkin Measure& Bartlett's Test

The Kaiser-Meyer-Olkin Measure of Sampling Adequacy measure varies between 0 and 1, and values closer to 1 are better. In this study, the KMO has a value of 0.77, which is much higher than the suggested minimum value of 0.6. Hence, the sample is more than adequate to conduct the factor analysis. The indices are shown in Table 2 below whereas the rotated matrix is reported in Table 3. It clearly displays that the independent variables can be broken down into two constructs for the regression analysis.

Table 2: Kaiser-Meyer-Olkin Measure& Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.77
Bartlett's Test of Sphericity	
Approx. Chi-Square	894.915
df	210
Sig.	.000

Table 3: Rotated Component Matrix

INFORMATION SEEKING BEHAVIOUR (ISB)	Component	
	Library as Academics	Library as Leisure
B13: I trust the library database more than resources given in the internet	0.769	
B12:I will use the popular terms suggested at the search box to support me in locating resources	0.740	
B7:I believe the OUM Library database supports me in getting resources for my thesis, project paper, assignment or exam	0.738	
B2:I find the OUM digital library is convenient for me to refer to when completing my thesis, project paper, assignment or exam	0.733	
B6:I prefer to use Library databases rather than the Internet search engine when looking for resources to complete my thesis, project paper or assignments	0.667	
B10: I will refer to OUM Library resources when doing presentations	0.649	
B4: I find the information resources in OUM Library sufficient for me to complete my thesis, project paper, or assignment	0.645	
B11: I believe the advanced search function in OUM Library portal is able to assist me in searching for accurate information	0.597	
B19: The WiFi speed in the OUM Library is sufficient for me to search for academic resources	0.561	
B21: I am satisfied with the services provided by the library	0.506	

INFORMATION SEEKING BEHAVIOUR (ISB)	Component	
	Library as Academics	Library as Leisure
B5: I consider the citation provided by the OUM Library portal is able to assist me in completing my thesis, project paper, or assignment	Item deleted from final model	
B8: I will ask the OUM Library personals for advise when I look for suitable resources / books	Item deleted from final model	
B20: I trust a five months loan period for maximum 5 books for one month is sufficient for me	Item deleted from final model	
B1: I believe the internet helps me to complete my thesis, project paper, or assignment	Item deleted from final model	
B15: I read the newspaper in OUM Library during my leisure time		0.772
B16: I use OUM Library room to conduct discussions		0.751
B14: I use the library guide in YouTube as a guidance when searching for information in digital library		0.719
B17: I browse Digital Library when I want to seek information for my non-academic matters such as seeking holiday destination		0.630
B18: I use Inter Libraryloan service when the book that I want is not available in the OUM Library		0.596
B9: I will refer to my classmates in MyInspire forum when I need advice on information resources	Item deleted from final model	
B3: I will ask my facilitators / lecturers when I need advice on resources for my thesis, project paper, assignment or exam	Item deleted from final model	

Extraction Method: Principal Component Analysis **Rotation Method:** Varimax with Kaiser Normalization

Reliability

Reliability was calculated using Cronbach’s Alpha. Cronbach’s Alpha is a measure of internal consistency, that is, how closely related a set of items are as a group. A “high” value of alpha ($\alpha > 0.70$) is often used as evidence that the items measure an underlying (or latent) construct. Before proceeding into the analysis, we check the reliability of the instrument use. Table 4 of this paper reports all the indices related to reliability and all constructs are found consistent (Nunnally, 1978).

Table 4: Reliability Statistics

Construct	Cronbach’s Alpha	No of Items
Library for academics	0.87	10
Library for leisure	0.78	5
Engagement	0.85	12

REGRESSION MODEL

The ANOVA significance value ($p < 0.01$) as shown in Table 6 signifies that the result is a valid model. The reported R square of 0.35 as presented in Table 5, indicates the goodness of fit of the regression model, which is closer to the substantial category. The p-values reported in Table 7 clearly signifies that three are significant statistical relationships between the independent variables and the dependent variable. Finally, Table 8 summarizes the findings of this study which proves that the objectives have been met.

Table 5: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.589 ^a	.347	.332	.58883

Table 6: Analysis of Variance

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	15.826	2	7.913	22.823	.000 ^a
Residual	29.818	86	.347		
Total	45.644	88			

a. Predictors: (Constant), Library for academic, Library for leisure

b. Dependent Variable: Engagement

Table 7: Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	3.396	.384		8.846	0.000
Library for academic	.308	.076	.376	4.034	0.01
Library for leisure	.184	.051	.338	3.628	0.01

a. Dependent Variable: Engagement

Table 8: Summary of Findings

Research Objective	Hypotheses	P Value	Findings
RO1: To examine the relationship between using library for academic and learners engagement	H1: There is a relationship between using library for academic and learners engagement	0.01	Supported
RO2: To examine the relationship between using library for leisure and learners engagement	H2: There is a relationship between using library for leisure and learners engagement.	0.01	Supported

IMPLEMENTATION

The findings of this research provide insights for the four implications below:

1. The University must find ways to promote the usage of library because it can enhance student's engagement which can influence academic achievements.
2. More training must be given to new students in the library.
3. More briefings must be conducted to give a clear picture to the students on how to utilize technology in OUM since digital library plays a vital role in delivering knowledge.
4. The postgraduate students are very much interested in viewing project papers and thesis of other students. The materials must be increased in view of increasing the satisfaction of this group of students.
5. Some of the students come to spend time in library for leisure. Newspapers and magazines can be used to attract them. Thus, materials can be requested to help enhance student engagement.

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THE LEARNING STYLES AMONGST LIFELONG LEARNERS IN SEKOLAH PONDOK ACCORDING TO KOLB LEARNING STYLE INVENTORY (KLSI) IN PENANG, MALAYSIA

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ABSTRACT

Lifelong learning and experiential learning, two separate terms but relatively having the same meaning. The nature of the learners in lifelong learning is well received as enjoying the journey towards the pursuit of knowledge for both personal and professional purposes. Experiential learning involves experiences in the learning process supported by reflection. At OUM, most of the learners are working adults. Lifelong learning is well connected with experiential learning regarding the learning process. This study intends to observe the views of lifelong learners from the perspective of experiential learning by Kolb (2017). The study aims to determine the types of learning styles practiced by lifelong learners in Sekolah Pondok Sg. Bakap, Seberang Prai. The views from the lifelong learners in Sekolah Pondok Pondok Tuan Guru Haji Yusoff, Sg. Bakap, Seberang Prai are gathered and fit in the Nine Learning Styles of the Kolb Learning Style Inventory Version 4.0 (KLSI 4.0). Qualitative approaches are used by triangulation techniques to ensure that the information obtained is more accurate, valid and reliable, then measured through the determiners adapted from Kolb & Kolb (2017). The findings based on the qualitative data shows that the learning styles have fulfilled most of the KLSI, some of the evidence seems to be unique due to the nature of the programme. It enables us to understand the process of learning and their unique method of learning. By strengthening the realisation of how they learn will create insights on the level of metacognitive control of their learning process, hence will enable us to create the rubric as a guide in designing the lesson on online learning at OUM.

Keywords: *Experiential Learning, Lifelong Learning, Sekolah Pondok*

INTRODUCTION

In Malaysia, lifelong learning has been practised for quite a long time since the emergence of Islam in the Malay Peninsular in the 19th century (Masyhurah Mohamad Rawi, Harun Baharudin, Maimun Aqsha Lubis & Siti Aisyah Romli, 2015). During these times, the development of religious education through informal religious learning sessions took place which then later progressed into a more formal and structured system known as Sekolah Pondok (Fauziah Fathil & Wiwin Oktasari, 2017). Notably, the education structures practised by Sekolah Pondok complement one of the concepts emphasised by Islamic Education which is lifetime education (Maimun Aqsha Lubis & Ismail Suardi Wekke, 2009).

In a literal sense, the concept of lifelong learning means that learning should take place at all stages of life from cradle to grave. It can be defined as the activities people perform throughout their life to improve their skills, knowledge and competence in a particular field (Field, J, 2001; Aspin, D.N & Chapman, J.D, 200 as cited in Marjan Laal, 2011), whether it is done formally or informally to enhance quality of life and employment prospects (CSEP, 2011 as cited in Marjan Laal, 2011). Tahira Basharat, Hafiz Muhammad Iqbal and Friha Bibi (2011) explains that lifelong learning also includes gaining and updating all kinds of knowledge, abilities, interests and qualifications. They further added that lifelong education focuses on enhancing the competence level of each person in all spheres of life. According to Mohamed Rashid Navi Bax and Mohd Nasir Abd Hassan (2003), the concept of lifelong learning started to become important in Malaysia due to Malaysia's changing demography as well as the pressures of globalisation and rapid technological changes. As it is, lifelong education is now considered as an essential part of education in Malaysia.

Sekolah Pondok, or hut schools, is among the oldest Islamic Education in the world. Mohamed (2003 as cited in Masyurah et.al, 2015) defined "Sekolah Pondok" as a term derived from the Arabic word *funudun* which means 'guest house'/'*rumah tumpangan*' or lodging for travelers. In the context of Islamic education, it is related to the small houses built near the learners' homes or near to the *Madrasah* and the master teacher situated in a unique location. Sekolah Pondok acts as alternative for the Malay society in Malaysia to gain knowledge, especially on Islamic religious studies. In the past, the establishment of Sekolah Pondok in Malaysia expanded rapidly as many religious scholars from Pattani migrated to Malaysia. However, the education system of the Muslim community has shifted to the Malay and English-streamed schools hence marginalising the Sekolah Pondok in Malaya (Farahdina Fazial & Zakaria Bahari, 2018). Regardless, Sekolah Pondok continues to contribute to the society by providing education, particularly religious knowledge, through lifelong education and producing educated scholars.

Experience in Experiential Learning Theory (ELT)

ELT defines learning as "the process whereby knowledge is created through the transformation of experience (Kolb & Kolb, 2003 p. 194).

How important experience in education? *When education is based upon experience and educative experience is seen to be a social process; the situation changes radically. The teacher loses the position of external boss or dictator but takes on that of leader of group activity* (Dewey, 1938 p. 59). In this view, experiential learning is seen as the importance of empowerment to the learners in deciding to choose their learning preferences. They rely on the people around them as the contributors of knowledge. The teacher is mere as a guide and a facilitator that facilitate the learning activity. The scenario will lead to the implementation of reflective and critical ideas. Rajbhandari (2011 p. 37) stated, *experiences equipped with cognition and social learning consecutively showed me a way to perceive learning with reflexive of critical ideas.*

Experiential learning theory is influenced by a prominent scholars such as Dewey, Lewin, Piaget and supported by the psychologist Carl Jung and Erik Erikson, a psychoanalysis, humanistic traditions, Carl Rogers, Fritz Perls, on Gestalt therapy and self-actualization psychology of Abraham Maslow (as stated by Kolb, 2015 p. 15). The thought contributes to two major areas:

1. The concept of adaptation that shows the importance of affective experience; and
2. The conception of socio-emotional development that provides a framework for describing the adult development process.

Table 1: Nine Style Topology (Kolb & Kolb, p. 429)

Criteria	Description
Initiating	distinguish by the ability to initiate action to deal with experience and situation
Experiencing	distinguish by the ability to find meaning from deep involvement in experience
Creating	distinguish by the ability to create meaning by observing and reflecting on experiences
Reflecting	distinguish by the ability to connect experience and ideas through sustained reflection
Analyzing	distinguish by the ability to integrate and systematize ideas through reflection
Thinking	distinguish by the capacity for disciplined involvement in abstract reasoning, mathematics and logic
Deciding	distinguish by the ability to use theory and models to decide on problem solution and courses of action
Acting	distinguish by a strong motivation for goal-directed action that integrates people and tasks
Balancing	distinguish by the ability to flexibly adapt by weighing the pros and cons of acting versus reflecting and experiencing versus thinking

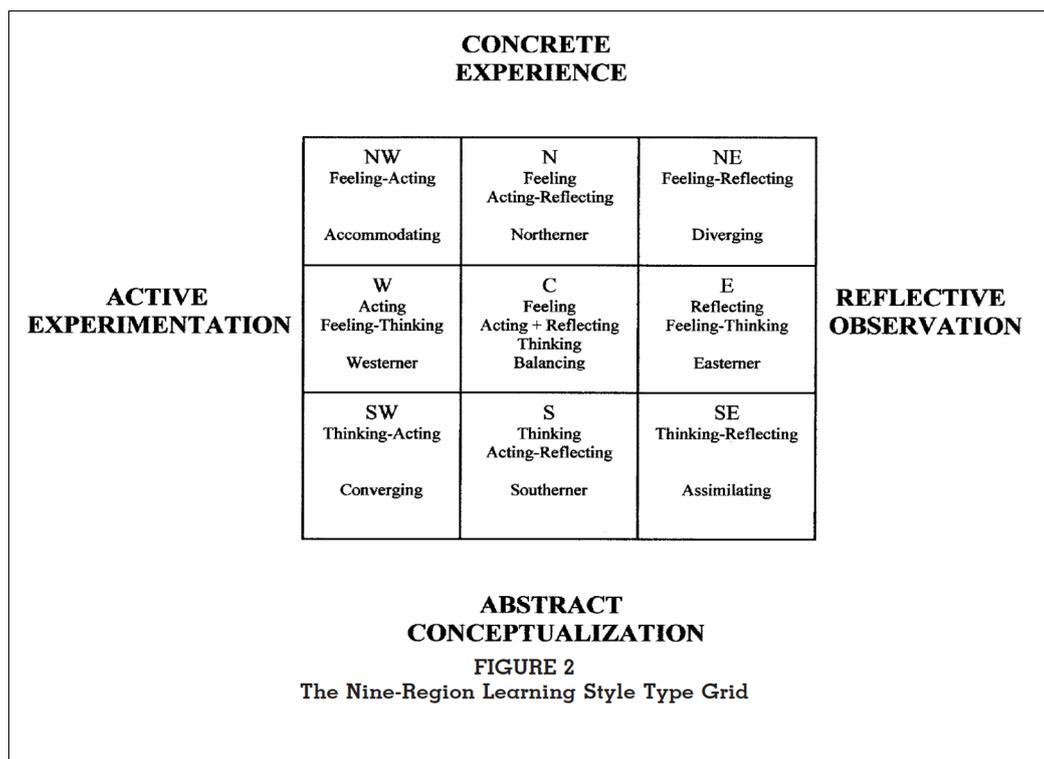


Figure 1: The Nine-region Learning Style Type Grid (Kolb & Kolb, 2003)

Note: The Nine-Region Learning Style Type Grid. From “Learning Styles and Learning Spaces: Enhancing Experiential Learning in Higher Education,” by Kolb, Alice & Kolb, David, 2003, *Academy of Management Learning & Education*, 2005, Vol. 4, No. 2, 193–212.

Figure 1 shows The Nine-Region Learning Style Type Grid which provides a detail characteristic of the criteria in the Nine Topology in Table 1. It contains traits and learner’s preferences which is term as a learning style that is dynamic. Kolb & Kolb (2003 p. 199) *defines learning style as a dynamic state arising from an individual’s preferential resolution of the dual dialectics of experiencing/ conceptualizing and acting/reflecting.*

Experiences are always synonym with learning, due to its wide range of application in our daily lives. Hence with the rich experiences of life-long learners can still survive in any situation of the learning environment. Kuk & Holst (2018 p. 155) stated that *experience is a broad term that points to a wide range of practices in everyday life. Yet, it does not suffice to merely acknowledge the fact that learning occurs in experience to incorporate experiential learning into practice.*

The Nine-Region Learning Style Type Grid can be served as an indicator to determine a type of learning style to adult learners who involves most of their time undergoing the learning process in the life-long learning environment such as ‘Sekolah Pondok’.

LITERATURE REVIEW

Experience and Life-long Learning

The meaning of life-long learning in the context of experiential learning is a synonym in terms of reflection that enable the learners to earn further meanings to become part of their prior knowledge. Kuk & Holst (2018 p. 151) stated that the current experience may or may not become a part of one's store of knowledge. It is only the part of an experience that is the object of reflection which acquires further meaning and becomes learned experience; this heightens the possibility for it to become part of one's prior knowledge.

Perhaps the simplest way to establish a connection between experience and life-long learning is by observing the terms on experiential learning, that everyone learns from experience (Kuk et al., 2018 p. 155). Most of the practices in experiential learning in adult education focusing on personal knowledge and lived experience (Michelson (1996 as cited in Sodhi, 2008). Kolb (2015 p. 37) described learning as a process whereby concepts are derived from and continuously modified by experience. The statement above connotes that in the context of life-long learning experiential learning should not deny the importance of 'continuous' and 'reflect' for the life-long learners to transform their experience.

Different individuals have been identified to have different dominant learning abilities. An individual with diverging style has been identified to have CE and RO as dominant learning styles. People with this type of learning style excels at viewing concrete situations from various points of view. The form of style is labelled as "diverging" due to the fact that people with this style performs better in situations that call for generations of ideas such as "brainstorming" sessions. People who possess a diverging learning style have broad cultural interests. They like to collect information and tend to specialize in arts. Their interests lie in people and they tend to be imaginative and emotional. In formal learning situations, people with a diverging style prefer to work in groups. They prefer listening with an open mind as well as receiving personalized feedbacks (Kolb & Kolb, 2003 p. 196).

On the other hand, an individual who has an assimilating style has AC and RO as dominant learning abilities. People with this learning style are best at understanding a wide range of information and arranging it in a concise and logical form. This type of group is less focused on people. Instead, the group is more interested in ideas and abstract concepts (Kolb & Kolb, 2003, p.196).

Other than these two types of individuals, another individual with a converging style is identified to have AC & AE as dominant learning abilities. This type of people is skillful finding practical uses for ideas and theories. They have the ability to solve problems and make decisions based on working out solutions to problems or questions. Individuals with a converging learning style prefer dealing with technical tasks and problems compared to social and interpersonal issues (Kolb & Kolb, 2003, p. 197). Last but not least, an individual with an accommodating style has CE and AE as dominant learning abilities. For this type of people, they have the ability to learn from primarily "hands-on" experiences. They are keen on carrying out plans and involving themselves in new and challenging experiences. (Kolb & Kolb, 2003, p. 197).

Michelson (1996, as cited in Sodhi, 2008) declared that experiential learning in adult education is one of the most significant areas of scholarship, focusing on personal knowledge and lived experiences. Despite that, the body has been neglected when it comes to the vast scholarship on experiential learning (Fenwick, 2003). Kolb (1984), who is considered as a pioneer in experiential learning, had separated the concrete experience from reflection under the assumption that thinking and doing are considered as separate entities.

Characteristics of the Life-long Learners

Social learning is very close to experiences. The life-long learners amongst the adult learners need it for reflective purposes. Omrod (1990 as cited in Kretchmar, 2017) stated that *people could learn by observing the behavior of others, as well as from the consequences of those behaviors*. This statement is in line with Rajbhandari (2011 p. 37) who stated that *behavioural modification was a significant reflection of the learning realm. Critical reflexive for me was to demonstrate my behavior to adopt the learned phenomena through rationalizing and reasoning to practice and act*.

As mentioned, an individual with an accommodating style possess CE and AE as dominant learning abilities. People with this learning style have the ability to learn from primarily “hands-on” experiences. They enjoy executing plans and involving themselves in new and challenging experiences (Kolb & Kolb, 2003 p. 197).

How we reflect experiential learning is particularly based upon the realm of learning to demonstrate our behaviours for the particular situation. Behavioural modification was a major reflection of my learning realm in collaboration with learning theories (Rajbhandari, 2011 p. 37). Hence, experiences that undergo reflection and become learned experiences include this specific element of reflection as a part of its essences in both Jarvis’s and Kolb’s models. Each model portray the way they structured the process of reflection in experiential learning. As such, academic discourse on experiential learning is not without particular assumptions on experience and its relationship to learning.

PROBLEM STATEMENT

The learning style amongst adult learners often perceived as left behind due to their obsolescence in teaching and learning activities. They also are inconsistency on the performance compared to the regular learners. Most of the life-long learner’s in Sekolah Pondok are adult learner that is matured and rich in experiences, with an independent learning preference. Their aim in pursuing the study is more towards getting extra knowledge rather than getting a credential. Due to this scenario, their learning style should be more flexible and simplified to create a better understanding for them to gain knowledge. They need it for reflective purposes. The changes in behaviour in terms of transforming new experiences are seen as a significant challenge to them. Lack of clarification on the learning strength and the learning style amongst the adult learners will lead to a disconnection of experiences and the learning process. In other words, the adult learner is rich in experience, but after they enrol in Sekolah Pondok, they will not be able to apply their experience in their learning process.

OBJECTIVES

The learning preferences by the adult learners especially for an elderly learner, need to be observed and clarified due to amongst them, most of them still need further education in a very specialized area according to their needs. They seem to be passionate and highly motivated in gaining new knowledge. In order to achieve the objectives, observation needs to be made on the learning strength and types of learning style owned by the learners. The purpose of this study is to:

1. Identify the learning strength of the life-long learners in Sekolah Pondok following Nine Learning Style by Kolb and Kolb (2017).
2. Determine a type of experiences amongst the life-long learners following the Nine Learning Style by Kolb and Kolb (2017).

RESEARCH QUESTIONS

This research seeks to find answers to the following questions:

1. How would the participants describe the learning strength?
2. What experience does the participants engage to build deep personal relationship?

METHODOLOGY

The study uses a qualitative approach to address the research objectives and research questions. The data gained from the focus group comprises of one (1) administrator, five (5) Ustaz (teachers) and twenty (20) participants. The focus group is held at Sekolah Pondok Pondok Tuan Guru Haji Yusoff, Sungai Bakap, Seberang Prai, Penang, is conducted at different time and location. Five interviewer involves interviewing the participants. The interview session is recorded via video camera. The outcome of the interview is then transcribed from the Penang Malay dialect to a standard Malay language and then translated to English for analysis.

The view from the lifelong learners in Sekolah Pondok Pondok Tuan Guru Haji Yusoff, Sungai Bakap, Seberang Prai is gathered and fit in the Nine Learning Styles of the Kolb Learning Style Inventory Version 4.0 (KLSI 4.0) (Kolb, 2017 p. 428). Qualitative approaches are used by triangulation techniques to ensure that the information obtained is more accurate and valid and reliable, then measured through the determiners adapted from Kolb & Kolb (2017, p. 430–433).

The coding method by Saldana (2016) is used to determine the themes. The Nine Style Topology (Kolb & Kolb, p. 429) serves as a construct for the theme. The coding pattern that is repetitive, regular or consistent occurrences of action/data is used to determine the relationship between unity and multiplicity (Saldana, 2016 p. 5). The pattern is coded by category and sub-category then link it to the theme. The conclusion is made based on the tendency of data towards the theme. The data that is fit to be in the category and sub-category is considered as fit to the Nine Style Topology as below:

Table 2: Nine Style Topology (Kolb & Kolb, p. 429)

Criteria	Description
Initiating	distinguish by the ability to initiate action to deal with experience and situation
Experiencing	distinguish by the ability to find meaning from deep involvement in experience
Creating	distinguish by the ability to create meaning by observing and reflecting on experiences
Reflecting	distinguish by the ability to connect experience and ideas through sustained reflection
Analyzing	distinguish by the ability to integrate and systematize ideas through reflection
Thinking	distinguish by the capacity for disciplined involvement in abstract reasoning, mathe mathis and logic
Deciding	distinguish by the ability to use theory and models to decide on problem solution and courses of action
Acting	distinguish by a strong motivation for goal-directed action that integrates people and tasks
Balancing	distinguish by the ability fo flexibly adapt by weighing the pros and cons of acting versus reflecting and experiencing versus thinking

ANALYSIS OF DATA

The translated data is organized into the category, the sub-category through the data pattern as adapted from Saldana (2016 p. 14).

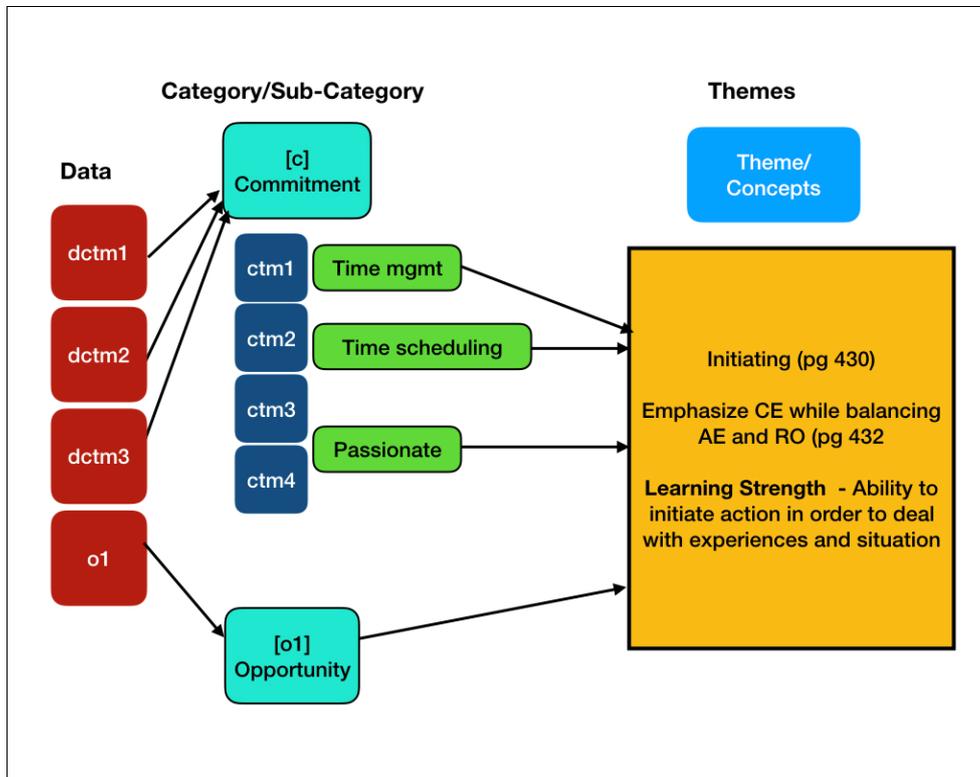


Figure 2: Example of Data Simulated in Streamlined Scheme Adapted from Saldana (2016 p. 14)

After organized the data in a streamlined scheme, the data is coded into Coding patterns (adapted from Saldana, 2016 p. 5) into two categories. The repetitive data is coded as 1 (1a, 1b and so forth) and the consistent data is coded as 2 (2a, 2b and so forth).

Table 3: Coding Patterns (Adapted from Saldana, 2016 p. 5)

Category	Description
1	repetitive
2	regular or consistent occurrences of action/data is used to determine the relationship between unity and multiplicity

The data is then evaluated through the determiners as below:

Initiating (pg 430) for RQ 1. How would the participants describe the learning strength?

Table 4: Description of Determiners for RQ 1 Adapted from Kolb & Kolb (2017 p. 430)

Determiners	
A	learn from hands-on experience and real-life experience
B	try out new and challenging experiences
C	volunteer for leadership on tasks
D	able to act quickly and decisively in a changing environment
E	willing to take risks to identify new opportunities and generate possibilities for success
F	learn best by tuning into the present circumstances and less from reflection about past events

RQ 2. What experience does the participants engage to build deep personal relationship?

Table 5: Description of Determiners for RQ 2 Adapted from Kolb & Kolb (2017 p. 433)

A	learn from deep involvement in life experiences and contexts
B	rely on own feelings and reactions to people and situation to learn
C	sensitive to other people feelings and are particularly adept in building meaningful relationship
D	open-minded and accepting that lead to difficulty in making independent judgement
E	innovative and uncoventional in approach to problem solving
F	approach a problem intuitively rather than logically and later seek validation through reflection and action

FINDINGS

RQ 1. How would the participants describe the learning strength?

The result of the focus group interview in the category of commitment and sub-category of time management shows that two of the data (2) are consistent and another two shows repetitive data (1). The consistent data (2a) that is inline with determiners 1,2 and 6. The data shows that even though the participants have a very tight schedule for the lecture, they manage to spare time for their house chores and leisure talk. Data (2b) which is inline with determiners 1 and 6 shows besides attending the lecture they have leisure time with their family during the weekend. The learning strength amongst the participants is defined by determiner A, B and F.

Theme: Initiating Criteria: distinguished by the ability to initiate action to deal with experience and situation Emphasize CE while balancing AE and RO	Category/ Sub-Category	Determiners
2 ^a Over here our schedule is pretty densed. In the morning we will for lecture, after the lecture we will perform the Subuh prayer. There are times when we pray for Isyra and dhuha. At 11.30am we go back to cook. So, we were not able to have small talks. (p1)	Commitment/ Time management	Data 1a – None Data 1b – None Data 2a – A, B, F Data 2b – A, F
2 ^b On Friday and Saturday there are those who goes out. Some are also taken by their children to relax and go out for meals. (p3)		
1 ^a We cook only a little. One dish only. (p2)		
1 ^b But, not only that we are satisfied eating, but not even eating...when getting old, the appetite is different. (p1)		

Most of the data under the category of Commitment and sub-category of Time Scheduling are consistent where different pattern occurred within the data. Data (2a p1) with in line with determiner A and D, shows beside the busyness on daily activities they manage to do three tasks related to the religious, academic activity. The other participant (p3) added they managed to do housework after the academic activity, two of the data (2a and 2b) with determiners A, C and D) is supported by data 2c with determiners E and C, that shows their commitments in fulfilling the academic schedule. The learning strength amongst the participants is defined by determiner A, C, D and E.

Theme: Initiating Emphasize CE while balancing AE and RO	Category/ Sub-Category	Determiners
2 ^a Living here needs to manage time as I mentioned earlier. After Zohor prayers, some will go to Ustaz Sani's lecture. Some will visit the Tok Guru's house to study the Al Quran. After that, we will recite the Al Quran at our respective cottages. After Asar, we will attend Ustaz Salikin's lecture. So, there was no time wasted. (p1)	Commitment/ Time Scheduling	Data 2a – A, D, Data 2b – C, D Data 2c – E, C
2 ^b We just follow, after lecture we will go back and rest for a while. At the same time, we will also wash our clothes. (p3)		
2 ^c Yes. Usually everyone will attend the lecture. If it is followed closely, there will be no time wasted. (p2)		

Data 1 which is inline with determiners B, D, E and F, shows repetitive data that came from one source (p1). It shows the learning environment in the Sekolah Pondok have a significant influence in pursuing and passionate about the religious study, without it she found that the knowledge is insufficient. The learning strength amongst the participants is defined by determiner A, C, D and E.

Theme: Initiating Emphasize CE while balancing AE and RO	Category/ Sub-Category	Determiners
^{1a} If I'm really right, like me I have been here for 5 years, we will feel that we gained more knowledge and more love towards the cottage. When I go back home it's not fun anymore. (p1)	Commitment/ Passionate	1a – E, F 1b – B, D, E, F
^{1b} For me as a pensioner... I say to myself... that I do not have to teach anymore. I used to be a school administrator, but now I go to the cottage/school to study. The sense of teaching is gone. There is also requests from the madrasah that I teach Science subject, English.... but I reject it because I think my own knowledge is insufficient. During those days, I somewhat neglected learning the religion. But now I have the time to learn. (p1)		

Most of the focus group interview have fulfilled the six determiners (A, B, C, D, E and F) in the theme; Initiating that shows the participants can initiate action to deal with experience and situation. The participants are likely to rely on the grasp experience to transform into a new experience.

RQ 2. What experience does the participants engage to build deep personal relationship?

The result of the focus group interview shows the data in the category of relationship and sub-category of experience. Three of the data (2a, 2b and 2c) is consistent. Data 2a which is in line with determiner A and B shows that the participants apply their knowledge to gain experience. Data 2b with determiner A and D shows that the willingness of the older participants to share their experience. Data 2c which is not in line with any of the determiners shows that instead of sharing knowledge the participants also shared information on family matters. Data 1a and 1b with determiners C show the strong bond between peers. Most of the data (2a, 2b, 1a and 1b) is inline with determiners A, B, C and D, which shows that most of the participants are likely to have no traits on determiners E and F. As overall, the learning style rely on building the relationship rather than being innovative through problem-solving and reflection.

Theme: Initiating Emphasize CE while balancing AE and RO	Category/ Sub-Category	Determiners
2a. When we receive knowledge, we will use the knowledge and from there we will gain experience. (p1)	Relationship/ Application of experience	2a – A, B 2b – A, D 1a, 1b – C
2b. Each of us have the knowledge. The ones aged 50 to 60 surely will have the basic experience. Here, we are just adding the knowledge. (p4)		
2c. At times, share some information including family matters. (p5)		
1a. So, the bond of friendship with each other must certainly be strong. (p1)		
1b. Yes, it is strong, like siblings, like a big family. (p2)		

The interview from the focus group below reflects the category of sharing experience, past-experience, note taking and self-reflection and the sub-category of personal experience and revision. Data 2a and 2b show the importance of scholars regardless of their age they are well received by the participants due to they are knowledgeable. Data 2c, 2d and 2e shows the importance of Ustaz (teacher) as a point of reference. Most of the data in this category cover all determiners that show the participants rely on own and other experiences in building a deep personal relationship.

Theme: Initiating Emphasize CE while balancing AE and RO	Category/ Sub-Category	Determiners
2a. The younger ustaz we will accept his knowledge, meanwhile the older ustaz we will accept the knowledge and his experiences. (p3)	Sharing experience	2a – A, B, C 2b – None 2c – F 2d – D, F
2b. No! I worked and after my retirement, I came here. (p1)	Past experience/ Personal Experience	2e – F 1a, 1b – A, E, F
1a. Yes. We do our revision by reading through the notes that was taken. (p2)	Note taking/ Revision	
1b. Sometimes, we will refer to old scriptures/ books or other scriptures/books. (p1)	Self reference	
2c. If we are unsure of something we will refer to the ustaz. (p5)		
2d. We will think first and absorb relatable information. (p6)	Self reflection	
2e. There are many ustaz here, we could ask anytime. During studying or outside of studying time also possible. (p4)		

CONCLUSION

The participants (adult learners) wholly depend on their previous rich experiences in their learning process to transform into new experiences. They are rich and experiences and share their experiences with their peers vice-versa hence enable them to be more knowledgeable for them to practice what they have learned from their Ustaz and their peers. The scenario reflects the criteria of initiating in Kolb & Kolb (2017) that emphasizing Concrete Experience (CE) while balancing Active Experimentation (AE) and Reflective Observation (RO). According to The Nine-Region Learning Style Type Grid (Kolb & Kolb, 2003), their learning preferences are on ‘accommodating’ that have criteria ‘feeling – acting’. The findings above are in line with indicators (AC and AE) by Kolb & Kolb (2003 p. 197) with converging style. The style stated that they have they have the ability to solve problems and make decisions based on finding solutions to questions or problems. Individuals with a converging learning style prefer to deal with technical tasks and problems rather than with social and interpersonal issues.

On the whole, according to the determiners which reflect the Nine Style Topology (Kolb & Kolb, p. 429), their learning style depends on constructing the relationship through problem-solving and reflection. The nature of ‘accommodating’ shows they can learn from primarily “hands-on” experiences. They enjoy executing plans and involving themselves in new and challenging experiences (Kolb & Kolb, 2003 p.197).

This study focuses on the learning strength and types of experiences amongst adult learners in Sekolah Pondok. The learning strength and experiences only limited to the learner’s preferences in the context of local participants. More study with the same methodology needs to be conducted to gather more data that enable us to gain insight into the other learning preferences.

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WHY ODL IS AN ALTERNATIVE FOR VISUALLY IMPAIRED LEARNERS IN 21ST CENTURY

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ABSTRACT

Open and distance learning (ODL) as “a way of providing learning opportunities that is characterised by the separation of teacher and learner in time and or place; ...the use of a variety of media... [For] two-way communications that allow learners and tutors to interact; [and] the possibility of occasional face to face meetings between tutor and learners (COL's; 2009). Today, ODL allows learners to access instruction and learning materials including those with disabilities. With regard to this new era of learning approach, it raised several significant questions as to why visually impaired learners choose to pursue their study in ODL institution, does ODL accommodate visually impaired learners' for higher education particularly in the 21st century? This is a qualitative study which in-depth interviews being done on 10 visual impaired graduates either with low vision or totally blind who were studying in OUM, to find out why they chose ODL University to pursue their study. Besides, this study is also meant to detect what is their main difficulties and needs in the ODL environment. The finding indicated that ODL is an alternative for visually impaired to pursue their higher degree although they had face some accessibilities issues.

Keywords: Open and Distance Learning, Visually Impaired Learners

INTRODUCTION

Today, many institutions of higher education provide greater access to learners to meet market demands, and are adopting online delivery of instruction at the course and programme level at a rapid pace. In fact, this instruction approach has become a very popular choice for teaching and learning in tertiary education level. Almost 3.9 million students were enrolled in at least one online class during the fall of 2007. The 12.9% growth rate for online enrolment is much greater than the 1.2% growth overall of the higher education student population (Allen & Seaman, 2008).

In the world of digitalisation, online or e-learning education is seen as an alternative to everyone to acquire their knowledge and skills. It is considered as a flexible and appropriately inclusive to deliver inclusive education to all including for persons with disability (PWD). Through online education, technology could be used to support inclusion education. The advent of technology and ODL could go a long way in widening access to education for the majority of children and PWD, flexibly so that the learning process can go on. These special needs groups may be able to access materials from home, which is seen as the safest, least expensive environment. This could be incorporated with occasional

attendance at local study centre and a form of blended learning that incorporates Open Education Resources (OERs) such as Open Learn (Khokhar, 2007).

LITERATURE STUDIES

Distance education is practiced around all parts of the world to provide study opportunities for those who cannot or do not want to take part in classroom teaching (Holmberg, 1995). Online courses could enhance the learning opportunities for people that experience barriers to attending classroom base courses which could be due to health, climate, transportation, physical accessibility or even disabilities factors (Debenham, 2002). These e-learning facilities were similar to those traditional classes. Then, students who had print impairments which now can access course materials, notes and handouts on the website without assistance, as long as those are designed to be accessible.

In the design of ODL, instruction materials should enhance access for all. However according to Burgstahler (2002) the issues of access focus of the separation of student and instructor and rarely include consideration of needs of students with disabilities. In order to establish the positive environment for providing support students with visual impairment, it is imperative to interrogate the concept of inclusion, its pedagogical implications for the learner in the context of a universal design in ODL.

According to Sindile Ngubane-Mokiwa (2018), feedback from visually impairment learners to assignment is often inaccessible; the software used is incompatible; learning and assessment is designed in exclusionary approaches; assessment facilities are not conducive; and lack of proactive innovative assessment strategies. This lack of genuine inclusion is also evident in the challenges the blind students face during assessment. These barriers are experienced at both formative and summative stages. He recommended ways in which barriers to assessment can be removed. These include addressing inclusive assessment strategies in professional development initiatives.

Cuthbert Majoni and Julieth Mashatise (2017) conducted a study on visually impaired learners in ODL. The study found out that the students with blindness should have the technical equipment that can be presented or adapted to be relevant to them. The study concluded out that ODL is ideal for students that are blind because they learn at their own pace and in the comfort of their homes. However, there is great need for highly trained personnel to assist such students. The study suggests that there is need to establish resource centres at ODL institutions for internet, Braille computers and e-learning to facilitate training of students with blindness.

In the past, McBroom (1997), found that visually impaired students in ODL faced the problem of navigation accessing resources and accessing information. They fail to access e-resources and have little access to computers gargets or software. Open and Distance education by increasing use of webpage adverts and resources in support of students studying at their institution. Blind students need specialized qualified personnel to take care of their educational and social needs. Today, online or distance education is seen as an alternative to everyones to acquire their knowledge.

One of the universal design principles is recognition of the ideal that access to education is one of the basic human rights (Harrison 2006). Therefore accommodation of learners with special needs is essentially ensuring that access to high quality instruction is provided to all. Universal design principles ensure cognitive, affective and systemic learner support in ODL which reinforces student's confidence; self-esteem and progress, (Tait, 2003).

Consequently, the preparation of instructional materials, using universal design principles in the context of Moore's theory on ODL, would enhance access and inclusion of students with disability. Inclusive education appreciates every learner's fundamental right to learn and acknowledges that each child has unique abilities and needs. Seemingly, if given the right opportunities, all children can develop their potential. Inclusive education considers differences in the learning and physical abilities of children as

opportunities for making education system and schools more responsive and dynamic. Inclusive education enables both teachers and learners to feel comfortable with diversity and to see it as a challenge and enrichment in the learning environment, rather than see it as a problem. (Tait, 2003).

PROBLEMS STATEMENT

In general, visually impaired learner's experienced challenges in their studies and this could impact on their academic success including in ODL environment. Most ODL institutions indicated that they would welcome and interested in terms of providing support and will try their level best to enable visually impaired learners to cope within the ODL system. Visually impaired learners without adequate support are unlikely to succeed in their studies. According to Mapuranga and Nyenya (2014) these services and facilities are not readily available in institutions of higher learning. However the quality of support and services offered to students with disability requires to be identified and requires a unit to effectively support their learning. Thus, this paper intends to find out the reasons why visually impaired learners chose to enroll in ODL university like OUM and analyze the data to conclude whether ODL is fit or not fit them as an alternative for pursuing higher education in the 21ST century.

The rationale to carry out this study is because PWD often faced with varieties of barriers towards participation in all aspects of society, including physical environment, information technology, legislation, policy or societal attitudes and discrimination. These result to unequal access to society, services, education, employment, health care, transportation, political participation or justice. Traditionally they tended to be considered only as issue of social welfare and protection, but nowadays the approach towards disability has gradually been considered as part of overall development and human rights agenda. UNESCO (2003).

OBJECTIVES

The objectives of this paper are below:

1. Explore why visually impaired learners chose ODL University as an alternative mode to pursue their study.
2. Analyze whether ODL accommodates visually impaired learners' for higher education?
3. Identify their main challenges face in ODL environment.

RESEARCH QUESTION

There have several research questions to be address in this paper and there are as follow:

1. Why visually impaired learners chose ODL University as an alternative mode to pursue their study?
2. Does ODL accommodate visually impaired learners' for higher education?
3. What are their main challenges in ODL environment?

THE SIGNIFICANT

This paper aims to contribute to the limited literature on special needs learners particularly the visually impaired learners within the ODL environment in Malaysia. It is hoped that the findings would be useful as a fundamental ground knowledge for the relevant bodies to explore appropriate strategies to make ODL be more inclusive and accommodating the visually impaired learners in the 21st century. Besides, this primary data also significantly helps the ODL providers such as OUM to adopt more effective measures to achieve the goal of education for all. With regards to this, it could contribute to the empowerment of the visually impaired community in the era of new Malaysia.

BASIC TERMS

Open and Distance Learning (ODL)

The meaning of Open and Distance Learning refers to education and training in which using the learning resources, rather than attending classroom sessions, is the central feature of the learning experience as defined by the Commonwealth of Learning (COL, 2003)

COL's (2009) also defined ODL as "a way of providing learning opportunities that is characterized by the separation of teacher and learner in time and or place; ...the use of a variety of media... [for] two-way communications that allow learners and tutors to interact; [and] the possibility of occasional face to face meetings between tutor and learners.

The term open and distance learning reflects both the fact that all or most of the teaching is conducted by someone removed in time and space from the learner, and that the mission aims to include greater dimensions of openness and flexibility, whether in terms of access, curriculum or other elements of structure.

In this case, OUM has introduced a friendly management learning system named as MY Virtual Learning (myVLE) and now named as myInspire. The virtual learning environment or through myVLE provides learners with learning experience almost similar to a normal classroom. Learners can interact with their peers, tutors and facilitators as well as to access course materials and the digital library. They can also access key information such as academic records, timetable and latest information. Learners can study from printed modules or access the online learning resources. Some examples of online resources like interactive study materials, quizzes, video lectures and I-radio.

Visually Impairment

Visual Impairment is defined as loss of vision for an individual to complete tasks without specialized adaptation, (Mason, McCall, Arte, McLindell and Stone, 1997). This means that the loss of vision impedes learning unless modifications are made to teaching methods, materials and learning environment. The degree of impairment varies from low vision to total loss of sight (blind). The low vision category includes those with remaining or residual vision. According to Webster and Roe, (1998) people who fall into the category of 'blind' depend on tactile, auditory and other sensory input other than sight, as means of learning and require specialized equipment.

METHODOLOGY

This was a descriptive study. The respondents involved in this study were referring to visually impaired who had graduated from OUM. Interview method was used to interview 10 OUM visually impaired graduate. They had graduated either at bachelor degree with honors or master degree. Data were generated through phone interview. The primary data were obtained directly from the respondents. The data analysis was done through thematic analysis as required by the research question.

FINDING AND DISCUSSION

Open University Malaysia (OUM) has become one of the top leading service provider in ODL in Malaysia so that, OUM would be chosen as a case study. The rationale was OUM offers access to education to people with disabilities. This means that OUM has provided a great opportunity for visually impaired learners to pursue their studies in a university. In fact, this form of study is widely adopted in many countries to enable disabled people to improve their academic qualifications and social integration within a community. Huey Siew and Normahliza (2012).

According to Mapuranga and Nyenya (2014) the services and facilities are not readily available in institutions of higher learning for PWD. However the quality of support and services offered to students with disability requires to be identified and requires a unit to effectively support their learning. With regards to this current development, it is important to explore why many visually impaired persons tends to choose ODL as their choice to further their study in tertiary education. The finding and discussion would be divided into several subthemes accordingly. It includes why they chose ODL to further study, does ODL accommodates them and what issue and challenges face by visually impaired learners. It is important to note that the symbol of R used in this context is refers to respondent, M represent male and F is refers to female.

Why Choose ODL?

There have various reasons why many visually impaired adults would like to pursue their study in OUM.

“I am a working adult and it is a reason why I choose OUM. It also more flexible and Therefore, OUM is convenience and suitable for me. Of course, the attractive factors are OUM give me discount for the tuition fees” (M and R.₁)

One learner had said “I choose OUM as it has flexible time and the class is only 4 to 5 times per semester. So, it is more suitable for working people like me.” (F and R.₂)

This learner described “OUM give me 75% discount which it help a lot in reducing my financial burden.” (M. and R.₃)

In addition, one respondent shared her view as “I come to OUM because Ministry of Education send me here to further my study. It also located nearby to my house and work place. I found it very convenience and fit my goals” (F. and R.₄)

Meanwhile, e-resources has becomes one of the key factors to determine the visually impaired learners to choose ODL. For instance, “I chose OUM because e-learning would enable me to manage my study. It could reduce my burden and stress due to many e-resources such as e-library and e-book which I can read through computer” (M. and R.₅)

Equipment and support services have been identified to adequately serve their needs. Visually impaired learners felt there was need to have qualified and trained staffs designated to the various needs of them, appropriate resources for their learning environment should be provided, encourage faculty, academic advisors, staff and other students to proactively respond to the needs of learners with visual impairment.

Does ODL Accommodating Visually Impaired Learners?

Based on the finding, it demonstrated that ODL could become one of the options for visually impaired persons to pursue their higher education. It could be justified as “ODL provide wider opportunity for us to enrich ourselves. So, visually impaired persons could have more opportunity rather than just depending on the conventional university to give us the opportunity. Furthermore, it is not all the conventional university either public or private university to accept us.” (M. and R.₁₀)

There have another respondent further to elaborate this positively. “In Malaysia, many visually impaired persons have not much choice to further their higher education especially after completing their for six and even after living the school. Therefore, ODL could be considering as a hope for us to access to the degree and post graduate courses.” (M. and R.₉)

Besides, from the digital perspective, “today, many visually impaired had acquired better computer skills and with more disabled friendly device as well as special software application, it is surely could enable more visually impaired to brows internet and also used the online facilities to improve their quality of life including obtain better education qualification via ODL.” (M. and R.₅)

“Since many visually impaired persons could use computer to perform their daily lives so that, ODL absolutely could help the visually impaired to study through online. Probably, ODL would be able to reduce our mobility barriers if we studying in the campus and we can do our stuffs in a more easy way such as could access to e-library to get various learning materials. The most happy part is we can get our material in a softcopy whereas, if we study in conventional university, students have to search for a hardcopy book and for the visually impaired learners, we have to spend more times to scan the book and then, convert it into word copy.” (F. and R.₄)

Since the finding demonstrated that ODL could fit well for visually impaired learners and many of them did voiced up that ODL could facilitate their learning process effectively. Therefore, in 21ST century, more efforts should be given to help the marginalize group to obtain better education and wider their access to education at tertiary level. “Visually impaired should be given more opportunity to equally to access online study. Since, there have various ICT device and support services already available for improving the quality of visually impaired persons life; therefore, education providers also need to fully aware on the needs and supports resources to deliver effective online education for visually impaired.” (M. and R.₃)

Furthermore, “since many visually impaired persons have an opportunity to learn computer skills and gadgets like smart phone; so, online or e-learning should become another platform for us to pursue for higher education.” (F. and R.₂)

“Through online study, we could easily connect to the Virtual Campus to check the forum or announcement via certain communication channel or search for our learning materials. In fact, we can do it independently without much assistance from sighted persons.” (M. and R.₇)

In overall, it is happy to say that ODL could be an alternative for visually impaired persons to pursue their higher education. In order to enable visually impaired persons to enjoy full participation via ODL in the near future, commitment and responsibilities from ODL provider is equally important. This scenario supported as “the greater awareness that exists regarding visual impairment, the more likely it is that ODL institutions will meet the students’ needs.” Further studies need to be done on facilitating

the smooth inclusion of visually impaired students in ODL institutions of higher learning (*CH Tichauya, CR Alexander, M Paul, and D Emanuel; 2012*).

Inclusion involves many stakeholders and it is a process that is difficult to implement. It is also controversial in the sense that it has multiple interpretations; it means different things to different people. Poverty, ethnicity, disability, gender or membership of a minority group may limit access to or marginalize within education. Cultural, social and economic consequences of these factors vary from time to time, country to country and from location to location (UNESCO, 2003). Therefore, ODL provider could integrate this philosophy and approaches to make ODL available to visually impaired persons in more holistic approach. Finally, visually impaired learners need specialized qualified personnel to take care of their educational and social needs Chikukwa and Chimbwanda (2013).

It is important to note that the right to education is promoted by Article 24 of the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) which states that:

States Parties recognize the right of persons with disabilities to education. With a view to realizing this right without discrimination and on the basis of equal opportunity, States Parties shall ensure an inclusive education system at all levels and lifelong learning. States Parties shall ensure that persons with disabilities are able to access general tertiary education, vocational training, adult education and lifelong learning without discrimination and on equal basis with others. To this end, States Parties shall ensure that reasonable accommodation is provided to persons with disabilities.

Issue and Challenges

One of the objectives of this paper is to detect visually impaired learners main difficulties face and needs in the ODL environment. Through the interview, the finding indicated that although visually impaired learners could adapt and abled to managed their study well but, they did face certain degree of challenges. There have one respondents pointed out that “in overall, I am happy to study here. However, I also faced some difficulties such as no visually impaired peers support to share and exchange experiences. We have to try and error in everything until we can solve our problems. It really need a lot of hardworking and individuals efforts.” (F. and R.₈)

As one of the respondents said “sometimes, the e-book and e-learning materials are not able to access due to the accessibility issue.” (M. and R.₁₀) besides, “it was common that not all e-materials can be read by our computer. Such as scan image document or some softcopy document with too many graphic so, we have to seek for assistance.” (F. and R.₄)

In terms of social support, “in ODL, it was a bit lonely; we have not many friends like in our school times. Class-mates were come and go and always change in each semester. So, it quite challenging to seek for friends help.” (M. and R.₇).

“My best friend was my computer because I have not many course-mates around. Sometimes, they did not come to the class. This means that it was difficulty to have face to face interaction and discussion.” (M. and R.₉)

From the computer skills perspective, “it is a fact that engage in ODL always required good computer skills and the software application also need to be updated at all time. Otherwise, we have difficulty to access to the e-learning materials.” (M. and R.₃)

Furthermore, “sometimes, the internet connections also have problem and it causing a lot of troubles and the data can be lost. E.g., if having connecting problem then, I am not able to access e-library and my assignment progress was delay” (M. and R.₆)

Meanwhile, access to instruction and learning material for visually impairment learners always becomes a challenge. There have one very common issue faced in ODL by visually impaired learners were “Sometimes, the available format for the content is not accessible, so we have to seek for the solution. In relation to this, we have to change it into an accessible format, or maybe ask our relatives or friends for helping to convert to word file such as Convert pdf document to word document. When come to the images or picture, we need to get sibling to describe it.” (M. and R.¹⁰) so, it is significantly to mark that the e-learning materials should be user friendly.

No doubts, e learning had encouraged the inclusion of students with various disabilities to further their knowledge (Di Lorio, Feliziani, Mirri, Salomoni and Vitali 2006). Even though these e-learning opportunities had greatly benefit learners with disabilities with learning amenities, there are still many barriers that hinder with their usage (Fichten, Asuncion, Barile, Fossey and De Simone, 2001). These barriers could be from the attitude of the learners, or those of architectural ones such as the favorable classrooms for disable people to study. For example, many public building such as library, schools, classroom, restroom access, and entry to building were not equip for disable person prior to the American with Disabilities Act of 1990 (ADA).

Despite facing such difficulties, there have some recommendation made to overcome such challenges. We could provide several possible formats (Braille, audio, web, PDF, Word, etc.) so that each student can choose the one that best meets their specific needs. If the ODL provider could provide accessible and usable materials so that student with visual impairment can enjoy equal education conditions compared to students who do not have a visual disability. Besides, Train staffs or lecturers to develop accessibility content to ensure that contents and access are comply with accessibility standards. (Pablo Rebaque Rivas, Llorenç Sabaté Jardí and Eva P. Gil-; 2011).

CONCLUSION

This finding has provided a greater insight to ODL institution to have better understanding on the visually impaired learners engagement in ODL. As discuss above, ODL or online study can be concluded as an excellent method of reaching the marginalize group. This paper also could create greater awareness of the need for inclusive approach within ODL mode of delivery for visually impaired learners. In order to make ODL to be the choice of visually impaired persons in 21ST century, it is very importance for all to address the needs of special need learners when planning online educational programs and designing instruction. Of course, the issue and challenges face by visually impaired learners raised in this paper is crucial for ODL providers to seriously to look into it in order to move forward for inclusion education. ODL providers need to think of diverse learning needs when designing learning courses and support services for all learners particularly the needs of learners with visual impairment. Finally, ODL is the answer for accessible and inclusive for visually impairment learners because it brings education to anyone’s door step. However, it becomes fully beneficial when all the necessary equipment as well as the technical aids is being provided.

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