LEARNING OUTCOMES IN ONLINE AND DISTANCE LEARNING: A STUDY OF LEARNERS' EXPERIENCE

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Abstract

ODL institutions have often been seen as possessing an innovative and technology-driven delivery approach in teaching and learning practices. The key is in the online delivery of instruction for working learners. Online delivery would require e-tutoring and the use of learning materials to faciltate instruction across diverse groups of learners in a ubiquitous learning environment. This study focuses on Open University Malaysia's approach in leveraging online learning for its stakeholders via its academic programmes. This study attempts to ascertain factors which affect the learning outcomes in ODL. The study was conducted via web survey on 397 learners enrolled at Open University Malaysia from 2012 to 2015. The sample consisted of learners aged between 18 to 64 years. The measurement of learning outcomes was determined via a 5-point Likert rating scale questionnaire. In addition, open-ended responses were also elicited to confirm quantitative findings. Three key constructs emerged from factor analysis, i.e. i. teaching and materials, ii. e-tutoring, and iii. learning experiences. These 3 factors were then confirmed using Structural Equation Modeling techniques to determine model fit derived from exploratory factor analysis. The results show a good fit of the hypothesised model with the structure of the data. As ODL institutions enrol learners from various demographic groups, this study attempted to look into whether demographic differences such as gender, age categories, experience in online learning, learners' CGPA results and time spent on online learning had a significant bearing on learning outcomes. The findings show that female learners perceived teaching and materials, e-tutoring and learning experiences better than male learners but these differences are statistically not significant. From the perspectives of age groups, the study found that age maturity results in slight differences in teaching and outcomes, i.e. the older the learners the more positive the outcomes. However, across the different age groups, no statistical differences exist ($p > .05$). This study also found no significant differences ($p > .05$) in the perception of outcomes between learners who had previous experience in online learning compared to those who had not. Based on the learners' CGPA scores, this study shows a general tendency for learners who score high in CGPA to also perceive positively in the 3 constructs, viz. teaching and materials, e-tutoring and learning experiences. However, no significant differences ($p > ,05$) existed across the different CGPA groups. An interesting finding of this study is that the time learners spent in logging-in to the online sessions - this had a significant effect on the outcomes ($p < .05$). The study concluded that the more time expended in logging-in online, the better would be the outcomes on teaching and use of the materials, e-tutoring and learning experiences. Based on the empirical evidence of the study, this paper puts forth a proposition that ODL is an effective delivery system for working learners - leading to good learning outcomes. ODL can guide learners towards the acquisition of desired knowledge and skills needed to excel in academic pursuits among working learners.

Key Words: learning outcomes, online and distance learning, programme evaluation

1. Introduction

In Malaysia, online and distance learning (ODL) has been incorporated as one of the major shifts under the Malaysia Education Blueprint (Higher Education), 2015 – 2025. This Blueprint, together with the Malaysia Education Blueprint (Preschool to Post-Secondary Education) charts education development plans from preschool to higher education until 2025. Both these Blueprints provide a comprehensive education development plans for the future via a number of major shifts to leapfrog Malaysia's education system to greater heights. The need to such as a comprehensive and integrated plan has become more pressing due to the need to leverage education at all levels to a level which emphasises high quality standards on par with that of developed countries. For higher education, 10 major shifts were planned covering all aspects of higher education development from infrastructure to the quality of instruction and encompassing all levels of higher education including ODL programmes delivered by open universities in Malaysia. It is expected that this comprehensive Blueprint would result in a technology-enabled delivery system tailored to the education needs of all students whether those under the conventional mode or ODL mode. All in all, the output of the higher education system would result in the production of graduates with high employability skills and suitable to the needs of the job market.

2. OUM as an ODL Instituion

Open University Malaysia (OUM) is a part of the Malaysian Higher Education system and involved in producing the manpower of the future in the industries including the teachers needed to serve the schools (preshool to post - secondary). In this aspect, OUM is entrusted with the role of human capital development geared towards the working class. Therefore OUM's learners comprise mostly adult learners who are studying to upgrade themselves with higher academic qualifications needed to excel in the work environment. As a result of this emphasis, OUM's role must be multi-prong catering to the needs to adult learners who are vastly experienced in their current vocation and who would like to upgrade their knowledge and skills to a higher level. To meet these challenges, OUM has to deliver a flexible, working adult-friendly and open academic system which allows working adults the opportunity to pursue lifelong education.

Since its establishment in 2002, OUM has played a remarkable role in educating adult learners by providing quality online and distance learning programmes to a cumulative enrolment of 130,000 learners. In addition, OUM is also entrusted with upgrading the qualifications of teachers from certificate/diploma to bachelor's degrees sponsored by the Ministry of Education. In this respect OUM has successfully graduated more than 50,000 teachers since its establishment. As it involves hugh number of teachers and the need to produce them within a relatively short period of time the conventional approach may have its limitations. The modus operandi of OUM is therefore in the adoption of the ODL mode of delivery system whereby learners study at their pace via good learning materials and delivered through the e-learning or online mode without sacrificing the quality of education. To ensure its success, the proximity of learning is a major consideration. OUM has established 34 learning centres spread across the country from urban to rural areas by providing access for education for all who want quality education near their homes or work places.

The ODL approach undertaken by OUM needs to evaluated from time to time to determine the worth of the programme in terms of its learning outcomes. The findings of such evalutions would provide inputs to decision-making leading to programme improvement. This study is an attempt to determine the outcomes of OUM's learners' experience from various perspectives which have contributed to the success of such approach. The uniqueness of OUM's ODL has won many awards, both locally and internationally and ensured recognition of its programmes from bachelor to doctoral. To what extent has OUM's study programmes been successful from their learners' perspectives is the subject of this study – a learning outcomes study.

3. The OUM Learner Experience

OUM being a private ODL institution has to reinvent itself to compete with the more established and conventional higher education instututions in Malaysia. Towards this, OUM has developed its own Learning Management System (called MyVLE) to provide an online learnng platform for teaching, learning and communication. OUM's learners undertake the blended learning approach (face-to-face and online) or purely online learning modes. To complement teaching and learning via its MyVLE, OUM has also developed numerous modules for both undergraduate and postgraduate programmes. These modules serve as guides to learners and facilitators. Learners choose what and when they want to learn according to their own schedule. Face-to-face seminars are held on weekends to better serve learners almost all of them are working adults. Learners can study from the printed modules, e-modules, reference books. They can also access learning resources online, video lectures, discussion forums and many other features in the learning management system.

There is a need for continual improvement to the ways teaching and learning is taking place. This includes upgrading the learning managment system with new technologies and features. OUM has implemented on a pilot basis a new learning management system called MyInspire to replace the MyVLE to enrich learners' experience in its ODL delivery and better leverage collaborative learning. Towards this, learners will be able to collaborate better via interaction with their peers, tutors and facilitators as well as access e- materials from the digital library. They can also access key information such as academic records, timetable and obtain the latest information regarding their study programmes. In other words, the management of learning will be greatly taken care of in a more systematic manner.

OUM's learning centres which are located near learners workplace and homes provides increases access for face-to-face interaction. The 34 learning centres set up by OUM act as enablers as learners can make use of high-speed broadband even in the rural areas where conventional universities could not be set up for economic reasons. At least one learning centre can be found in each state. These learning centres are well-equipped with computer labs, tutorial rooms, Wifi internet facilities as well as meeting rooms and reading areas. The learning centres have been designed to provide learners with a friendly and conducive learning environment.

Learners can also leverage on their prior learning experience to gain admission to OUM's programmes by taking the Accreditation of Prior Experience Learning (APEL) evaluation for example to be admitted into the master's level programmes without having the first degree. Being linked to the first 11 Malaysian public universities OUM has access to renowned subject-matter-experts to develop learning materials, supervise learners and where appropriate serve as tutors and facilitators.

The delivery of teaching and learning materials specifically instruction is supported by experienced staff who understand the needs of working learners. A helpdesk during normal office hours and online support service via e-CRM supports learners as queries must be responded within 48 hours. OUM has a digital library collection of close to 100,000 e-books and an extensive collection of academic journals.

4. The Research Problem

There is an abundance of research pertaining to online education but very little of these centres on the academic impact and learning effects of this modality on students (Jahng, 2007; Kirtman, 2009; Tallent-Runnels et al., 2006). There is a need for research on the learning outcomes of ODL. This would improve our understanding of the pedagogical processes which affect learners' experience, particularly in the delivery of instruction. The National Institute for Learning Outcomes Assessment (2012) defines learning outcomes as "the expected knowledge, skills, attitudes, competencies, and habits of mind that students are expected to acquire at an institution of higher education." This study concerns learners' experience based on the modus operandi of OUM's ODL programmes.

The overall goal of ODL is learning effectiveness – the ability of learners acquiring the knowledge and skills needed for the intended programmes based on the desired learninng objectives. According to Swan (2003), learning effectiveness must be the primary factor for which quality in education is measured or judged. This is very pertinent as the underlying aim of ODL is ensure learners optimise their learning experience so that they get quality education as if it would have been obtained via the conventional delivery system. A study of this nature is important as it exposes the fundamental issues of this delivery system from the perspectives of OUM's customised blended and online learning programmes. Using advanced statistical analysis via Structural Equation Modeling, a deterministic approach can be undertaken to explore and confirm factors which determine learning outcomes.

Findings can then be used by decision-makers to leverage further on this type of delivery approach for instructional development and improvement.

This study aims to address 3 research questions, i.e. i. To what extent do socio-demographic indicators affect OUM's learning outcomes?; ii. What are the factors which determine the effectiveness of OUM's learning outcomes?; and iii. How do these factors mediate learners' experience in OUM's academic programmes.
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5. OUM's Approach to Teaching and Learning

Learning outcomes have their roots on learning theories. Of relevance is the social constructivist theory by Vygotsky. The social constructivist theory is related to constructivism, an important aspect of technology-based learning mediation. Social constructivism considers learners' acquisition of knowledge and skills as socially situated and can be "constructed" through interaction with other learners. Learners construct knowledge for one another, thereby collaboratively creating a shared learning culture. The collaboration within this shared learning culture promotes acquisition of knowledge and skills through peer – peer interaction and learner – facilitator interaction. In the case of OUM this is carried out via the learning management system called MyVLE.

Related to constructivist learning via OUM's learning management system, a pertinent issue is the learning theory called connectivism. McHaney (2011) and Siemens (2004) introduced the concept of connectivism, which conceptualises learning as a shared, community experience which is facilitated by technology. Connectivism suggests that whereas the other learning theories assume that learning occurs within the individual, learning can also occur outside the individual and be stored and organised by technology. This brings forth ubiquitous learning which can be carried through mobile devices such as notebooks and mobile phones. This learning theory suggests that due to the vast capability of technology to store and redeploy knowledge, what becomes a more important component of learning is how to find and access the information already

available. OUM provides digital search engines which provide access to a host of e-journals and e-books from the web.

Research shows that students who are characterised as the most successful in an online learning environment tend to be motivated, independent, and organised (Phipps & Merisotis, 1999) and have good self-regulation strategies (McMahon & Oliver, 2001). McMahon & Oliver (2001) claimed that students in an online environment must accept a greater responsibility for their own learning since they have limited access to instructional support. As Hannafin et al. (2003) indicates, attitudes toward web-based instruction impact students' abilities to learn in that media, so student data concerning distance learning is needed. Based on their particular academic background, students who routinely use computers are better able to learn via computer lessons. This study examines the role of e-tutoring as a mediation to learners' experience via OUM's approach.

As OUM's facilitators comprise experience and highly qualified academicians from both public and universities in Malaysia, variation in the delivery of instruction does vary and this has a bearing on learners' experience. Shelton & Saltsman (2005) found the most common complaints from faculty members regarding online education are a lack of understanding for this method of teaching, a lack of institutional support, and fear that the quality of education in the online environment suffers. Research has found that online courses that utilise tools to augment interaction (student-to-student and student–to-instructor) and engagement further enhance learning outcomes and overall satisfaction (McFarland & Hamilton, 2005; Palmer & Holt, 2008). Research consistently shows that engagement and interaction in the online classroom leads to student learning outcomes, and a quality online learning experience (McFarland & Hamilton, 2005; Dykman & Davis, 2008; Palmer & Holt, 2008).

6. Research Methodology

This survey was undertaken by OUM's Institute of Quality, Research and Innovation (IQRI) in 2015 to study some aspects of learning outcomes prevalent in OUM's e-learning programmes. Data were collected through a web-based questionnaire. The survey instrument comprised demographic information, rating scale items (5-point Likert scale), and open-ended questions. The sample comprised 397 learners from all the faculties in OUM's Learning Centres encompassing i. Education and Language, ii. Applied Social Sciences, iii. Business, iv. Science and Technology, and v. Nursing and Health Science.

The analysis process involves the following steps:

i. Use of the Principal Component Method to factor-analyse the rating scale items. This results in the extraction of 3 factors;

ii. The items nested within the 3 factors were then summed up to obtain the composite mean scores of individual responses;

iii. Reliability tests were undertaken to test the internal consistency of items which made up the 3 factors;

iv. Statistical measures such as t-test, oneway ANOVA, and regression were used to determine differences within and between variables;

v. Structural Equation Modeling (SEM) was used to build up the path diagram consisting of the observed variables and latent constructs. This is checked for overall fit using Goodness-of-Fit statistics;

vi. The significant predictors and highly correlated variables were then used to construct the mediation framework derived from the path diagram.

vii. Inferences and conclusions were made from the empirical evidence derived from Step 1 to Step 6 above.

Factor analysis extracted 3 factors and these can be labelled as i. teaching and learning materials, ii. e-tutoring, and iii. learners' experience. The reliabilities for these 3 factors are high with the first factor (teaching and learning materials) having a Cronbach alpha value of .944; second factor (e-tutoring) with an alpha value of .964 and the third factor (learners' experience) has an alpha value of .882.

7. Findings from the study

The findings from the study can be divided into: i. descriptive statistics of demographic information, ii. differences in learners' experience, iii. predictors of learners' experience, and iv. factors affecting learners' experience, v. mediation.

7.1 Descriptive statistics of demograhic information

Of the 397 respondents who participated in the survey, a large majority were female learners, i.e. 72.0% (n = 286) as compared to male students who made up only 28.0% (n = 111). In terms of age, a majority of the respondents belong to the age category of 25 to 34 years, i.e. 177 (44.6%). This is followed by those in the age category of 35 to 44 years, i.e. 106 respondents (27.7%). The smallest group came from those in the age category of between 55 and 64 years which number only 8 (2.0%) respondents. Most of the respondents belong to the "mature" age categories due to OUM being a university for working adults. A total of 214 (53.9%) students indicated they were on "fully online course" while 183 (46.1%) were not on the blended mode (online and face-to-face). This is so because OUM's niche is in life-long, open and online learning where students could access its virtual learning environment which is used to manage teaching and learning via the internet.

As far as the CGPA profile is concerned, 85.9% (n = 341) students belong to the higher achieving group, i.e. with CGPA scores higher than 2.0. This means that the respondents belong to the group who were doing well in their studies at OUM. When comparing gender with age groups, the findings show a greater percentage of female respondents belonging to the age groups of 18 – 24 years, 25 – 34, 35 – 44, 45 – 54, 55 – 64 and 65 – 74 years age groups. However, male students were more for those aged 75 years and above but this particular group is very small (n = 8). As in most universities and also OUM, female students comprise much more than male students in all disciplines of study.

7.2 Differences in learners' experience

From the gender perspectives, there are no significant differences (t=.914; df=162.6; p >.05) in the three, i.e. i. Teaching and Learning Materials, ii. e-Tutoring, and iii. Learners' experience. The mean rating for the female learners in terms of Teaching and Learning Materials is 3.71 (S.D. = .563; n = 286) as compared to the male group with a mean rating of 3.64 (S.D. = .735; n = 111). For the e-tutoring variable, again there is no significant difference (t=1.130; df=166.9; p >.05) with the mean rating female learners of 3.64 (S.D.=.807; n=286) and the mean for male learners of 3.49 (S.D.=1.01; n=111). For the Learners' Experience, there is also significant difference (t=.563; df=395; p >.05) with female learners rating with a higher mean (mean=3.25; S.D.=.754) compared with male learners (mean=3.21; S.D.=869).

Analysis of the three constructs via the fully online mode and blended mode shows no significant differences in the three constructs (p > .05). The findings also show that learners under the blended mode tended to rate higher, for example for Teaching and Learning Materials those in the blended mode rated with a mean of 3.71 (S.D.=.671; n=183) as compared to those on fully online mode (mean=3.67;S.D.=.565; n=214). For e-tutoring, those on blended mode rated with a mean of 3.61 (S.D.=.900; n=183) as compared to those on fully online mode (mean=3.58;S.D.=.847; n=214). For learners's experience, those on blended mode rated with a mean of 3.26 (S.D.=.749; n=183) as compared to those on fully online mode (mean=3.22;S.D.=.820; n=214).

From the perspectives of Log-In Time Categories, the findings show a general tendency towards high usage of log-in time with higher perceptions in three composite variables. As an example, those learners who logged-in "Less than 30 minutes" tended to rate lower than those who logged-in in the 20 – 60 minute category, 1 to 2 hour category, and 2 to 4 hours category. There are significant differences in the log-in time and how learners rated the three constructs (p < .05).

7.3 Predictors of learners' experience

For determining the predictors of Learners' Experience is used as the dependent variable while Teaching and Learning Materials and e-Tutoring are used as the independent variables. Table 1 shows the results of stepwise regression analysis.

Table 1. Predictors of learners' experience

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.708[a]	.502	.500	.55266
2	.714[b]	.509	.506	.54926

Predictors: (Constant), Teaching and Learning Materials[a]
Predictors: (Constant), Teaching and Learning Materials, E-Tutoring[b]

Regression analysis show that both Teaching and Learning Materials and e-Tutoring significantly predict Learners' Experience. Between the two and as shown Table 1, Teaching and Learning Experinece contributes 50.2% to the variance of Learning Experience. When e-Tutoring is included in the regression model, the change is minimal with the contribution increasing marginally to 50.9%.

7.4 Factors affecting learners' experience

Factor analysis using the Principal Component Method was used to extract salient factors from the data. Assumptions for factor analysis were checked and the Barlett's test of sphericity shows the presence of sufficient correlations in the dataset indicating appropriateness (chi-square=6471.362; df=276; p<.05). In addition the Kaiser-Meyer-Olkin Measure of Sampling Adequacy is very high, i.e. .954 and according to Hair, et al. (2010) this can be classified as meritorious.

For the extraction of factors, findings show a congruence in the percentage of variance method, latent root method, and scree plot method. Using the percentage of variance method, findings revealed the presence of 3 factors or principal components, i.e. i. Teaching and learning materials, ii. E-tutoring, and iii. Learners' experience. The first factor which is Teaching and Learning Materials contributes 56.03% to the variance, while the second factor, i.e. e-Tutoring contributes 7.69% and the third factor which is Learners' Experience contributes 6.43%.

The 3 factors derived under factor analysis were then disaggregated and analysed using Structural Equation Modeling (SEM) via SPSS AMOS to confirm the extraction of the 3 factors. The SEM analysis follows the guide put forth by Hair, et al (2010) which stipulates a 6-stage process comprising:

i.   Defining and operationalising the constructs;
ii. Defining the measured variables via a path diagram for the measurement model;
iii. Designing the study to produce empirical results with sample size assessed and the estimation and missing data addressed;
iv. Assessing the goodness of fit and construct validity of the measurement model;
v.   Specifying the structural model and assigning indicator variables to the constructs; and
vi. Assessing the structural model's validity.

Kline (2005) and Schumacker & Lomax (2004) proposed three levels of assessment of the fit of a model: (a) use of several fit indices and their recommended thresholds; (b) detailed fit assessment of standardised regression weights, squared multiple correlations, covariances, and model indices, suggesting model revision to improve fit; and (c) cross-validating of a model. In their opinion, the following fit indices can be used for interpretation of the output: the ratio of minimum discrepancy divided by degrees of freedom or CMIN/DF, goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), comparative fit index (GFI), root mean square error of approximation (RMSEA), and parsimonious goodness of fit index (PGFI). Blunch (2008) argued that individual parameters of the model can also be examined within the estimated model in order to see how well the proposed model fits the driving theory.

Byrne (2010) is of the opinion that SEM conveys two important aspects: a) the causal process under study are represented by a series of structural (i.e. regression) equations and b) these structural relations can be modeled pictorially to enable a clearer conceptualisation of the theory under study. Byrne further elaborated that the hypothesised model can be tested to determine the extent to which it is consistent with the data. Hence, if the goodness-of-fit is adequate, the model argues for the plausibility of postulated relations among the variables and

if it is inadequate, the tenability of such relations is rejected. In this study, Confirmatory Factor Analysis (CFA) via a path diagram was used to evaluate the best model fit.

In this study, the purpose in using SEM is to test for the factorial validity of learners' experience on a representative sample comprising OUM's online and blended programmes. This study would determine the extent to which the items which have been designed to measure a particular factor (i.e. latent construct) actually do so. The 1st Order CFA model was used and this model hypothesises a priori that: i. responses can be explained by the 3 factors comprising Teaching and Learning Materials, e-Tutoring and Learners' Experience. Figure 1 shows that path diagram.
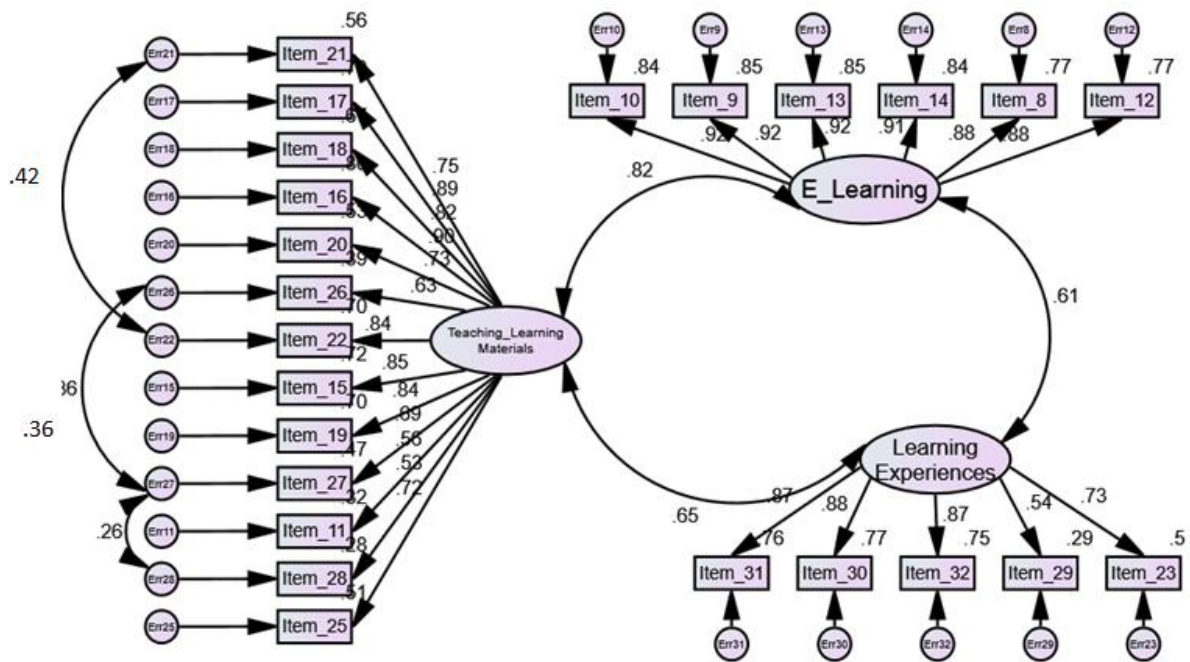

Fig. 1. Path Diagram of Hypothesised Model

SEM analysis shows an over-identified model is ideal for SEM analysis. While running SEM, the modification indices indicated that a number of observed constructs had some degree of overlap and if not rectified could result in model misspecification. These overlapping items were then corrected by connecting a covariance line between the error terms to obtain a better model fit.

The study shows a relatively high fit in terms of the constructs modeled after modification indices were taken into account. The findings show a high Goodness of fit (GFI) value of .820 and a Comparative fit index (CFI) value of .911 for the default model. The RMSEA value was within an acceptable value of .091 indicating a suitable fit.

Figure 1 shows the path diagram representing latent and observed constructs. The measurement values are standardised estimates. There is a regression weights (beta coefficients) among the three latent constructs, i.e. between Teaching and Learning Materials, e-Tutoring and Learners' Experience are relatively high. For example, the path diagram shows a weight of .82 between Teaching and Learning Materials and e-Tutoring, a regression weight of .65 between Teaching and Learning Materials and Learners' Experience while the weight between e-Tutoring and Learners' Experience is .61. The loadings as indicated by the one-way arrows linking the latent factors and the observed variables are high, meaning they load well between these variables, for example, the loading for observed variable Item_21 to Teaching and Learning Materials is .75. These same conditions apply for the other observed variables and latent constructs.

7.5 Mediation factors in learning outcomes

For this study SEM is used to determine the role of mediating variables on learners' experience within an independent-dependent relationship. When studying mediation, the theoretical underpinnings behind those variables must be reviewed comprehensively. In this study, e-Tutoring is used as the mediating variable in a causal relationship betweeen Teaching and Learning Materials and Learners' Experience. The issue at hand is whether e-Tutoring has a direct mediation effect on Learners' Experience when a direct path is created between Teaching and Learning Materials and Learners' Experience. In a mediational framework, the independent variable influences the mediator variable which in turn influences the dependent variable. The mediator variable serves to clarify the relationship between the independent and dependent variables. Figure 2 shows the conceptual basis for mediation. In mediation, Baron & Kenny (1986) stated 3 necessary conditions that must be met in order to claim that mediation is occurring. These are: i. X is significantly related to M; ii. M is significantly related to Y; and iii. The relationship of X and Y diminishes when M is in the model.
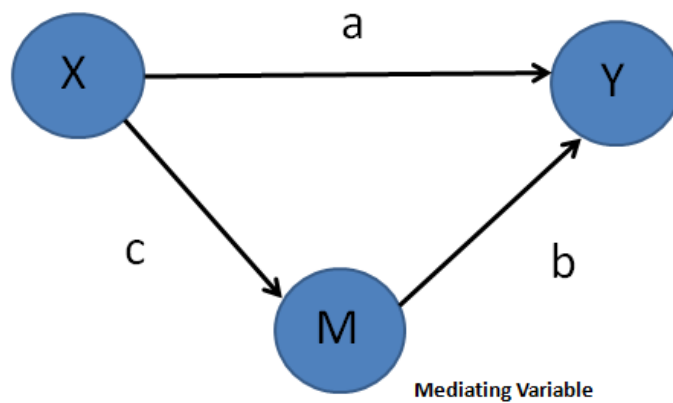

Fig. 2. Conceptual Basis of Mediation

Applying the conceptual basis of mediation as shown in Figure 2, the role of e-Tutoring as a mediator variable can be represented via Figure 3. In Figure 3, the path between Teaching and Learning Materials and Learners' Experience is direct and another path is constructed via the mediating variable e-Tutoring.
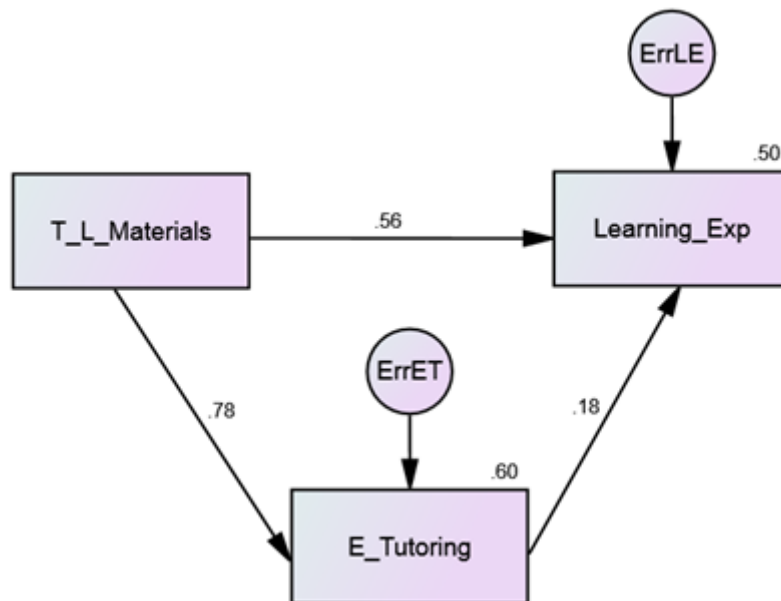

Fig. 3. Mediating Variables in Study

The findings as shown in Figure 3 show that there is partial mediation in the role of e-tutoring, i.e. e-tutoring mediates against learners' experience. According to Baron & Kenny (1986) partial mediation happens if the direct effect of the mediator construct M (see Figure 2) accounts for a significant amount of variance in Y but c remains significant. c remains significant but differs in sign from the 0-order correlation between X and Y then mediation with suppression is evident. The standardised coefficients or beta regression weights in Figure 3 show that when e-tutoring is present the weight between Teaching and Learning Materials to e-Tutoring is .78 while the weight between e-Tutoring to Learning Experience is .18. On the other hand, the weight between Teaching and Learning Materials and Learners' Experience is .56. This would imply that when e-Tutoring is present the regression weight is lessened between Teaching and Learning Materials and Learners' Experience. Hence e-Tutoring partially mediates between Teaching and Learning Materials and Learners' Experience.

8. Conclusion

SEM analysis confirms the extraction of factors via factor analysis. This works within an exploratory-confirmatory framework. The hypothesised model fits well with data structure. Since data shows a generally successful implementation of ODL outcomes it can therefore be concluded that OUM's ODL teaching and learning resources, e-tutoring system and learning experiences have resulted in effective and significant outcomes of the desired delivery system from learners' perspectives.

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