DEVELOPMENT AND DELIVERY OF OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT PROGRAMME THROUGH OPEN AND FLEXIBLE DISTANCE LEARNING

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Abstract

Open and flexible distance education (OFDE) removes the barriers to quality post-secondary distance education by offering quality programme through flexible delivery system with minimum admission requirements. OFDE also provides opportunity for working adults to seek lifelong education in a flexible manner. In line with the Occupational Safety and Health Master Plan for Malaysia 2015 (OSH-MP 15), Open University Malaysia (OUM) has been on the forefront in spearheading effort to offer Bachelor of Occupational Health and Safety Management (BOHSM) with honours and Master of OSH Risk Management (MOSHRM) through OFDE. Although it is quite challenging to offer science and technical related subjects through open and flexible distance learning, OUM has taken a bold step to explore the possibilities. This paper aims to present Open University Malaysia's experience in the development and delivery of the BOHSM with Honours and MOSHRM through open and flexible distance learning. This paper will share the strategies adopted by OUM.

Key words: OSH-MP 15, Open and Flexible Distance Learning, BOHSM and MOSHRM

1.1 Introduction

The economic growth of a country is dependent on its development through modernisation and industrialisation. In developing countries, industrialisation is an engine of growth to meet up with the challenges in the globalization era. While industrialisation can improve the economic status of a country, it can also be devastating if problems relating to workplace accidents and illnesses are not addressed in the organisation. One of the prominent news media in the country reported that there is an

increase of accidents in the workplace from 57,639 in 2010 to 59,897 in 2011 which is an increase of 3.92% (Utusan Malaysia, 26 May 2012). Of the 59, 897 cases, 1254 people were killed while 16,019 people suffered permanent disability and 58,643 were temporarily disabled. Various types of industrial accidents such as temporary and permanent work disability, shortened life expectancy, and premature retirement or death affect work productivity and hence the development of the economy of the organization. However, these mishaps can be prevented and controlled if employers and employees maintained an attitude towards awareness and concern on safety and health issues in the workplace. Acquiring knowledge in occupational safety and health and other quality assurance procedures related to the working environment reduce industrial accidents, illnesses and will improve productivity.

1.2 The Beginning of Occupational Safety and Health in Malaysia

Occupational Safety and Health (OSH) has been established in Malaysia since 1892, started with the Selangor Boiler Enactment 1892, the first legislation relating to OSH which addresses the industrial safety issues. The legislation was again gazetted in 1967 by the Parliament of Malaysia; this is when we advanced into the industrialisation phase. During this time there was an increase in the number of workers in the manufacturing sector especially in the field of microelectronics, chemical and mineral based industries, textile and automobile industries. Following that, in order to manage the safety and health problems associated with manufacturing industries, the Factories and Machinery Act (FMA) was enacted in 1967 and it was enforced by the Factories and Machinery Department (previously known as Machinery Department). This Act and the regulations was the cornerstone for OSH improvement for the next three decades before the introduction of the Occupational Safety and Health Act 1994. However the FMA 1967 only covers the factories, mining and construction industries and are also prescriptive in nature, and based on the traditional "checklist" system. In the workplace, hazards were identified and measures to overcome the hazards were required and it depends on the command and control approaches of the organisation. It was anticipated that the improvement and effectiveness of this Act and Regulations be taken over by the right agencies. Hence in 1994, Occupational Safety and Health Act (OSHA) 1994 were introduced to cover a wider based employee perspective and newer hazards in the

workplace were introduced. The Act was driven from the philosophy of the Roben's Commission and Health and Safety at Work Act 1974 in UK, emphasizing on self-regulation and duties of employer, employee and designer/manufacturer. The employer's duties include the provision of a safe system of work, training, maintenance of work environment and arrangement for minimising the risks at low as reasonably practicable. The responsibility on OSH is made to rest on those who create the risks (employers) and those who work with the risk (employees). This Act is based on self-regulations concept which was less prescriptive; insure all workers except for those in the armed forces and those who work on board a ship.

The Government of Malaysia takes an initiative to strengthen and cultivate a safety and healthy culture in the working environment. This is shown through the formulation of the Occupational Safety and Health Master Plan for Malaysia 2015 (OSH-MP 15) which was launched in 2009. This Master Plan intends to increase awareness, knowledge and commitment of the stakeholders to OSH planning to reduce injuries, diseases and fatalities. The three phases in the implementation include OSH Ownership, Self-Regulation and Preventive Culture. This will improve efficiency, productivity and business performance of industries in Malaysia.

In view of this, Malaysia has to increase the number of OSH practitioners in the country to advocate the OSH-MP 15. The positive reaction to OSH-MP 15 is to increase OSH professionals and this can be done by providing tertiary education through the Open and Flexible Distance Education (OFDE) platform. This method of learning provides an opportunity for working adults to continue education in the area that interests them the most.

1.3 Research Findings on the Management of OSH in the OFDE Platform

A market survey conducted by Carlson and Olson (2001) showed that respondents favoured studying occupational health, injury prevention and control, and industrial hygiene through distance education using technology-enhanced learning methods such as the Internet or CD-ROM.

Occupational safety and health professionals are interested in distance education using technology-enhanced learning (TEL) methodologies to meet their educational needs. The initiation of the internet and the widespread adoption of advanced technological measures have led to a new emphasis on online learning (Bartley and Golek 2004).

Technology on the e-learning platforms allows live interactive sessions in which students can join in. According to Sharma (2012), learning management systems can be designed to enable access to training materials as well as online assignment and examinations. Interactions in the forum are made possible through this learning management system.

Hence, we can conclude that offering OSH education programme through OFDE is feasible to assist the students in acquiring skills in designing, implementing, and evaluating strategies for improving injuries and illnesses prevention at the workplace.

OFDE is the best option for these groups of individuals to get back to school and pursue programmes related to their working environment or other professional courses. One of the main advantages of OFDE is the increased in flexibility as students can pace their work, study at their own pace and convenience. OFDE also reduces cost in travelling and students will be able to self-regulate their studying time with other commitments.

In the OFDE environment, students are also able to select the courses they wish to study. Learning materials are designed and prepared by experts in the area of study. The modules include self-assessment exercises which can provide instant feedback to students on their performance. The focus is on student centered learning as opposed to the more traditional teacher centered approach (Taylor 2000).

Despite the advantage of OFDE in offering OSH programmes, the main disadvantage is the lack of face to face contact and the benefits of meeting with fellow students to discuss issues. This problem can be reduced if some face to face seminar type work is included and also the growing use of email and other forms of electronic communication is making regular contact between tutor and student as well as student to student contact more readily available. Students are encouraged to form study groups and work in teams, as long as the work that is to be assessed on an individual basis is

individually prepared. As printed material can become outdated it has to be reviewed regularly, the digital material prepared is easily reviewed from time to time. Furthermore with the advanced in technology, the use of internet becomes more widely available and becoming a major source of distance learning material (Kilby 2001).

Although online learning is becoming mainstream in many organisations, many doubt that it is adequately meeting the needs of either the learner or the organisation (Kilby 2001). Three critical success factors in online learning are technology (ease of access and navigation, interface design and level of interaction); the instructor (attitudes towards students, instructor technical competence and classroom interaction); and the previous use of the technology from a student's perspective (Volery and Lord 2000). Therefore, faculty members and tutors must be sufficiently trained in pedagogy, technology, and communications so that students have the same level of instruction as they do for the more familiar classroom based and technical and also the instructional support personnel need to be readily available to work with the faculty members and support in the course development.

The crux of a country's development is education. It is dependent on how much the country focuses on the importance and significance of education in the well-being of its citizens. To develop knowledge based individuals who will form the human capital of a country, governments have the duty to promote education, and it has to be supported by all agencies including the public and private sectors.

1.4 Occupational Safety and Health in the Open and Flexible Distance Education Platform

OSH education should start from preschool and it should be continued throughout the curriculum and it should be considered as a part of lifelong learning. The European Agency for Safety and Health (2010) supports this in stating:

"Integrating or mainstreaming OSH into education forms a key part of developing a prevention culture by teaching children and young adults to live and work safely … is necessary to ensure that young people really are informed about core principles of risk

awareness and prevention before they enter the world of work ... should be a part of the life-long learning process, from pre-school onwards."

The OSH programme is offered through the OFDE platform in various universities such as University of Greenwich, University of Portsmouth, Indiana State University, Columbia Southern University, Tulane University, Open University of Hong Kong, and Indira Gandhi National Open University and in Malaysia, OUM is taking the lead.

One reason for the advancement of open and distance education in Malaysia is the perceived inequality in opportunities for higher education between working adults and full-time university students. In 1999, Open University Malaysia (OUM) was established to co-ordinate the open and distance learning programmes of all 11 local public universities in the country. Such developments are partly in recognition of the need to provide greater opportunity for more adult students to pursue programmes of study leading to the award of an appropriate qualification of their choice. Using the growth rate of student enrolment in Malaysia as an indication, educational growth inspired by distance education has been significant (Dhanarajan, 1990). However, there is a need to understand the motivation spurring participation in distance education so that higher education can provide for the exigent needs of the Malaysian labour force (Kumar, R.P. and Raghavan, S. 2008).

In line with the Occupational Safety and Health Master Plan for Malaysia 2015 (OSH-MP 15), Open University Malaysia (OUM) has been in the forefront in spearheading to offer the Bachelor of Occupational Health and Safety Management (BOHSM) with Honours and Master of OSH Risk Management (MOSHRM) through OFDE. Although it is quite challenging to offer science and technical related subjects through open and flexible distance learning, OUM has taken a bold step to explore the possibilities.

Currently, we have 1031 active BOHSM students since we offer the programme in September 2009 and 163 active MOSHRM students since September 2011. The attrition rate for BOHSM is 20.45% and 1.81% for MOSHRM respectively. The data for students in the BOHSM and MOSHRM programmes are as shown in Table 1.

Table 1: Profile data for BOHSM and MOSHRM

Demographic	BOHSM	MOSHRM
Gender	Male (82.44%)	Male (85.28%)
	Female (17.56%)	Female (14.72%)
Age	≤40 years (85.2%)	≤40 years (56.0%)
	>40 years (14.8%)	> 40 years (43.98%)

Male students comprise a bigger sector (82.44%) for BOHSM and MOSHRM. This is perhaps due to the nature of work which OSH practitioners are involved in tough, rough and challenging environment and it is more suitable for man.

From the analysis, 85.2% of the students in the BOHSM programme are less than or equal to 40 years old. As for MOSHRM, the gap is not clear as the study duration for the MOSHRM is only two years. The results for BOHSM supported Valentine and Darkenwald (1990), MacBrayne (1995) and Johnstone and Rivera (1965) findings, which showed that adult learners who choose to enroll in distance education programmes are those aged between 18 and 40. This results shows that the bachelor programme is favorable to the younger group since the possibility for a positive career development is viable. Older working adults tend to be less participatory, possibly due to the fact that getting a promotion is no guarantee despite having obtained additional tertiary qualifications.

The BOHSM programme offered in OUM differs from other OSH programmes offered elsewhere. The design of the curriculum incorporates content of OSH into business management. The curriculum also covers the needs of OSH legal compliance in Malaysia. In this way, the courses provide the right OSH competencies which will expand student's knowledge and skills. The delivery method includes experiential learning concepts with project-based learning and provides hands-on experience, to ensure that graduates have the 'real-world' OSH experience.

While BOHSM caters for the undergraduates, MOSHRM prepares students for higher post in the organisation. This programme is unique whereby the curriculum is designed to align OSH content into business operation towards business success and sustainability. The core component is focused on the management system and risk

management which forms the pillar of OSH management in the organisation. Problem based learning is adopted in the teaching and learning process.

1.5 Integrating Technologies in the Delivery of the OSH Programme

Open University Malaysia (OUM) is an Open and Distance Learning (ODL) institution and offers its courses via a blended mode; self-managed learning, online learning and face to face learning. Koller, V., Harvey, S. and Magnotta, M. (2009) stated that blended learning, also known as hybrid or integrated learning has recently become the dominant paradigm for technology based learning (TBL) success among training designers and experts. Blended learning typically refers to a training approach that combines a mix of online and face-to-face training delivery for improved engagement and better retention (Kim and Bonk 2006). Blending face-to-face with online activities also has the potential of bringing the best of both worlds together in a single course. In its most basic form, it combines a synchronous face-to-face lecture with some online follow-up activities, such as discussion forums or chats.

Learning requires more than transparent channels of communication and a means for transmitting knowledge, the most successful learning comes when the learner is in control of the activity, able to test ideas by performing experiments, to ask questions, collaborate with other people, seek out new knowledge, and plan new actions. Hence, current trends in the field of distance education indicate a shift in pedagogical perspectives and theoretical frameworks, with student interaction at the heart of learner-centered constructivist environments.

Learner-centered education is a teaching methodology that emphasizes the importance of understanding and catering to the students' needs, interests, and abilities. Learner-centered education embraces the learning where it provides the platform for the learner to have active exploration, construction, and learning rather than the passivity of lecture attendance and textbook reading (Bonk, Wisher and Lee 2004).

Being an ODL institution OUM believes the importance of learner-centered education in achieving excellence in education among the working adults. The university promotes flexible learning and strives to provide a quality learning environment for all

the learners who are working adults. OUM put a great deal of effort into providing quality online support through quality content and resources and having qualified online facilitators. Classroom teaching involves a variety of teaching aids for students to be active and engaged in learning. Online communication tools are used to engage learners in the learning process (Jonassen 1996). OUM continuously provides support for e-learning through the use of web-based modules, CDs, i-lectures, i-radio segments, lesson plans, e-schedules, online self-assessment and digital library. Online learning for OUM is assisted by the Learning Management System My virtual learning environment (MyVLE). Through MyVLE, students and tutors can interact with each other in lectures or tutorials that run virtually through the Internet. This approach, which includes discussions via chat, forums, I-tutorial, iCast (I radio segment with the audio book learning) and e-mail, sounds less formal but virtual classes are always supervised by a tutor who is a facilitator or mediator. The MyVLE platforms will feedback any question or queries raised by students within 24 hours to ensure that the learning system is always effective and efficient. Other learning aids such as digital libraries also facilitate students to get reference material such as e-books and e-journals in the fields of their study.

To deliver a structured and coherent lesson, OUM introduces the usage of lesson plans in BOHSM and a study guide for MOSHRM programmes. Both lesson plan and study guides is an extremely useful tool that serves as a road map to assist the learner in their lesson. The lesson plans also includes the exercises, questions and case study to assist learner to enhance their understanding on the subject taught.

OUM has also embarked in mobile learning and has implemented the use of mobile messages in several selected courses. OUM intends to further expand its mobile learning efforts and explore the use of (Quick Response) QR codes for immediate access of learning materials. QR codes provide a fast way to link with digital and online resources. The convenience in transferring information to cell phones has contributed to its popularity in many areas including business and marketing, and to a limited extent in education. QR codes are two-dimensional barcodes that can contain simple amounts of data such as multilingual text, a linked Uniform Resource Locator (URL), an automated SMS text, a business card or contact information (Law & So, 2010). According to Law and So (*ibid.*), QR codes have great potential in educational

endeavours as they are incredibly simple and quick to use – a feature that makes them ideal for teaching and learning. Another reason is that they offer a way to link the physical and virtual worlds by providing on-the-spot access to various information and resources; thereby taking teaching and learning out of the classroom (EDUCAUSE Learning Initiative, 2009). They also offer expanded pedagogical value in activities that encourage learners to create, contribute and share content. The use of QR codes seems applicable and attractive for the learning environment at OUM where learners are expected to be responsible for their own learning. The vast majority of learners are working adults, who are always on the move, thus institutional efforts towards making learning resources immediately accessible will make learning possible at the point of need.

1.6 Conclusion

Open and flexible distance education (OFDE) removes the barriers to quality post-secondary distance education by offering quality programmes through flexible delivery systems. OFDE also provides opportunity for working adults to seek lifelong education in a flexible manner. Although it is quite challenging to offer science and technical related subjects through open and flexible distance learning. For the OFDE platform, it is not impossible to deliver quality teaching and learning. The long break from school will be strengthened through our innovative teaching and learning process. Linking pedagogy and technology strengthens the subject matter as well as the lifelong learning skills.

References

Bartley, J.S and Golek, H.J. (2004). Evaluating the Cost Effectiveness of Online and Face-to-Face Instruction. Educational Technology & Society, 7(4), 167 – 175.

Bonk, J. C., Wisher, A. R, Lee, Y. J. (2004). Moderating learner-centered e-learning: problems and solutions, benefits and implications. Idea Group Inc. Retrieved

January, 2013 from
http://books.google.com.my/books?hl=en&lr=&id=e1USRYhQfP0C&oi=fnd&p
g=PA54&dq=power+of+learner-
centered+education+in+distance+learning&ots=FqGhsHkO76&sig=G6ZYAdaZ
vdJhlMI9_hpFNj_8O64#v=onepage&q=power%20of%20learner-
centered%20education%20in%20distance%20learning&f=false

Carlson, V. Debra Kay Olson, D.K. (2001). Technology-Enhanced Learning/Distance
Education: Market Survey of Occupational Health and Safety Professionals.
American Industrial Hygiene Association .Volume 62, Issue 3, 2001

Dhanarajan, G. (1990). *Universiti Sains Malaysia: Distance Education- A Spectrum of
Case Studies*. Kogan Page Ltd. London.

EDUCAUSE Learning Initiative (2009). 7 Things You Should Know about QR Codes.
Retrieved January, 2013, from
http://www.educause.edu/ir/library/pdf/ELI7046.pdf

European Agency for Safety and Health at Work. 2010. *OSH Education.* Retrieved
January, 2013 from:
http://osha.europa.eu/en/topics/osheducation/index.stm/rome.stm

Fender, D.L. (2002). Student and faculty issues in distance education occupational
safety and health graduate programs. Journal of Safety Research. Volume 33,
Issue 2, Summer 2002, Pages 175–193.

Johnstone, J. W., & Rivera, R. J. (1965). *Volunteers for learning.* Chicago: Aldine.

Jonassen, D.H. (1996). Computer in classroom: Mindtools for critical thinking. New
Jersey: Prentice Hall.

Kim, J.K. and Bonk, J.C. (2006). The future of online teaching and learning in higher
education. Educause Quarterly, Number 4.

Kilby, T. (2001). The direction of Web-based training: A practitioner's view. The
Learning Organisation, 8 (5), 194 – 199.

Kumar, R.P. and Raghavan, S. (2008). The need for participation in open and distance
education: The Open University Malaysia Experience. *Turkish Online Journal of
Distance Education*. Volume: 9 Number: 4 Article 5. Retrieved January, 2013
from http://tojde.anadolu.edu.tr/tojde32/articles/article_5.htm

Law, C., & So, S. (2010). QR codes in education. Journal of Educational Technology
Development and Exchange, 3(1), pp. 85-100.

Legislative and OSH-MP15. Retrieved January, 2013 from
www.dosh.gov.my/doshv2/index.php?option=com...view...

Macbrayne, P. (1995). *Rural adults in community college distance education: What motivates them to enroll? In New directions for community colleges* (pp. 85-93). San Francisco, CA: Jossey-Bass.

University Quality and Mobility. Retrieved January, 213 from http://portal.unesco.org/education/en/ev.php-
URL_ID=22329&URL_DO=DO_TOPIC&URL_SECTION=201.html

Taylor, P. G. (2000). Changing Expectations: Preparing students for Flexible Learning. *The International Journal of Academic Development 5*(2), 107-115

Valentine, T. & Darkenwald, G. G. (1990). Deterrents to participation in adult education: Profiles of potential learners. *Adult Education Quarterly*, *41*(1), 29-42.

Koller, V., Harvey, S. and Magnotta, M. (2009). Technology-based strategies. US Department of Labor. Retrieved January 2013 from http://www.doleta.gov/reports/papers/tbl_paper_final.pdf

Volery, T. And Lord, D. (2000). Critical success factors in online education. The International Journal of Educational Management 14/5, 216 – 223.

Utusan Malaysia, 26 May 2012