

Widening Access for Education: Proposing a Conceptual Model for Integrated Open and Distance Learning (ODL) on Demand

Norbaini Abdul Halim; Chooi Chea Chiam; Nur Azlin Omar; Tick Meng Lim; Siew Nooi Phang
Open University Malaysia

Abstract

The education world has seen a dramatic change in the mode of learning and teaching. Attention has been drawn to open and distance learning (ODL) as one method of educational instruction using advanced information and communication technology (ICT) as the enabler. ODL has become the means by which education can be accessed by all who so require, anywhere, anytime. Thus, ODL itself must be able to meet the “demands” of its stakeholders including learners and facilitators. There has to be in place a system that can support instant delivery of learning and guiding materials to learners and enables facilitators to guide and assess their learners both synchronously and asynchronously. Such a system should be holistic and dynamic in a way that it can cater ‘on demand’ any requests from the stakeholders. This paper proposes a conceptual model for integrated ODL on demand which can be utilised for the teaching and learning of a range of courses. The proposed model’s delivery mode would be based upon learning through visualisation, interaction, collaboration, exploration and a host of possible alternatives that can be replicated for any course carried out by ODL institutions including Open University Malaysia (OUM).

Introduction

The education world has seen a dramatic change in the mode of learning and teaching. Along this trend, there has been an increasing interest in ODL programmes. The ODL programmes are often marketed as providing an ideal way to study due to the flexibility to access high quality materials anywhere, any time and any place. ODL is also perceived as an alternative mode of delivery to widen access to education, satisfy continuing educational needs of adults and support lifelong learning.

UNESCO (2002) describes ODL as a means to increase the accessibility and flexibility of education, as well a means to combine work and education. Most of the ODL learners are distinctive students who encounter more time constraints as compared to students of the traditional learning environment, due to commitments such as work and family. ODL learners therefore require a good learning system that can be utilised to optimise and enhance their learning despite the many constraints.

Technology plays a vital role in changing what and how a person learns. The growth of ICT in particular, has stimulated ODL institutions to integrate such technology as the main enabler in the instructional and learning process. Integrating educational technologies also facilitate the adjustment of the learner from traditional mode of passive learning to becoming an active learner in the ODL environment. It needs however to be noted that the success of learning in such ICT driven environment depends highly on the efficacy of the learning system in supporting learning needs. A poor learning system become an obstacle to learning rather than support and motivate learning.

Web-based educational system in ODL

Due to the virtually unlimited linkages to world wide knowledge repository, web-based technology offers a great potential in the design and development of an effective ODL learning system. Aggarwal and Bento (2000) point out that advances in information technology and telecommunications has allowed web-based courses to replicate more seamlessly the features of face-to-face instruction

through the use of audio, video and high-speed internet connections that facilitate synchronous and asynchronous communication in chat groups, web discussion boards and virtual forums.

It appears that the use of the learning management systems (LMS) by many institutions of learning is only at the superficial level. The systems do support some form of learning, but do not provide a comprehensive learning environment which truly allows self-managed learning. For example, the level of communication via the learning management system is mainly asynchronous, and as such does not convey any kind of immediacy. Many learners relying on the learning support of this nature will tend to lose the intellectual thread and the urge to follow up as a result of deferred responses and delayed replies. ODL learning system therefore should include functionality that offers immediate interchanges that allow greater synchronous communication to take place. Forsyth (2005) proposes the use of synchronous communication for a regular 'drop-in' session where tutors can answer quick questions from individuals – often known as 'virtual office hours'.

Fidas et al. (2006) also stress on the importance of synchronous support in a web educational environment. They assert that the support should focus on the ability of the system to provide learners and tutors with necessary information that is important for each other regarding the past and current status of the involved entities. They propose that for web-based systems it is important to have services that are easy to use and install and which enhance the asynchronous communication with synchronous interactions among the involved users. By using such services the facilitators are able to monitor in real-time the learners' interactions with the educational content, while they are performing a learning task, investigating usability problems and providing synchronous support.

There are more factors to be considered in developing a comprehensive learning system. A wide range of learning systems have been designed to assist teaching and learning in ODL environments. Aggarwal and Bento (2000) highlight the importance of web-based education as providing lifelong quality learning to as many students as possible without limitation of time, place, language and individual economic status. Various technologies have been heralded as having the potential for dramatically changing instruction, yet most of what goes on in ODL continues to rely on tutor-learner interaction for both face-to-face and online mode. According to Santally and Senteni (2005b) although the concept of web-based learning and the use of Internet in teaching and learning have received increasing attention over the recent years, there is a wide belief that using the web as only a new kind of delivery medium for educational materials does not add significant value to the teaching and learning process. Nichols (2003) emphasises that not only the integration of technology in learning is vital but also needs to address the very important issue of enhancing the teaching and learning process, rather than just being seen as a new flexible delivery medium.

This paper recognises the importance of multiple technologies and learning objects in meeting the learning needs of a wide spectrum of ODL learners. The issue is however, the adaptability and practicality of the system to optimise learning needs. This paper therefore, focuses on analysing the strengths and weaknesses of current learning system, and proposing an alternative framework or model of implementation.

Open University Malaysia (OUM) as an ODL institution

OUM as the first ODL learning university in Malaysia has contributed to the field of education by offering multimode learning. Having set the trend, OUM continues to provide innovative approaches in the ODL environment that practices a blended pedagogy comprises three modes of learning namely self-managed learning, face-to-face tutorials and online learning as shown in Figure 1.

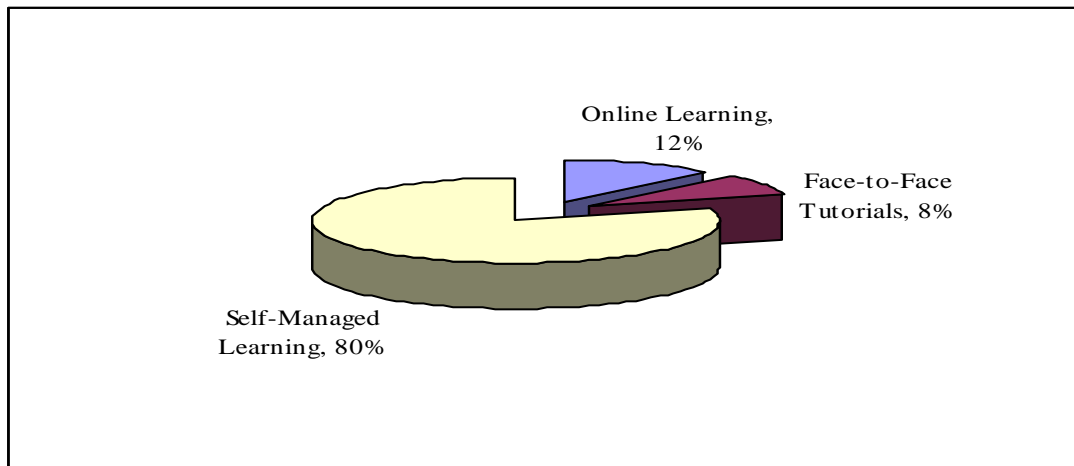


Figure 1: Proportion of OUM Learning Modes
Source: Open University Malaysia (OUM) Tutor's Handbook (2008)

The university utilises the combination of printed learning materials as the main learning resource supplemented by face-to-face interactions at learning centres and online learning through a designed Learning Management System (myLMS). MyLMS's essential feature is the asynchronous forum board that includes a series of functions such as forum, announcements, course material and course outline as well as online registration. Othman et al. (2005) argued that although the interactive element in the asynchronous forum board of the OUM has successfully created a positive learning environment through the high level communicative exchanges and instructional purposes, it appears that the interactions observed in their study lack the desired depth imperative for a rich and active collaborative environment that creates meaningful learning experiences among learners as well as the preferable cognitive dimensions necessary for high levels understanding and knowledge construction.

With the current web-based teaching and learning system, OUM learners are able to gain access to an unprecedented wealth of multimedia information including course materials, examination materials, library databases of e-books, e-journals and other library collections as well as the ability to interact asynchronously, outside face-to-face tutorials with peers and tutors using myLMS. OUM learners are provided with a wealth of various learning objects, many of which are assessable via myLMS learning management system. There are however other learning objects and learning materials that are available but "scattered". Some of these learning objects are learning materials on CD, learning courseware, printed modules and mobile learning system.

As the bulk of the learners' study time is spent on self-managed learning (as illustrated in Figure 1), there must be a transition from tutor-centred to learner-centred approach with a renewed emphasis on learning-oriented instruction and interactive learning. However, in providing quality support to learners particularly the adult learners, ODL institutions need to understand the expectations of its learners. Based on the existing mix of delivery mode and integrated learning model of ODL, there are issues that need to be addressed in order to move the learning process forward.

Current Learning Model of OUM

The use of innovative technology has enhanced education delivery and knowledge acquisition in the ODL environment. Web-based environment and various learning objects have been developed and used at OUM to support various learning scenarios. Figure 2 describes the current learning model of OUM.

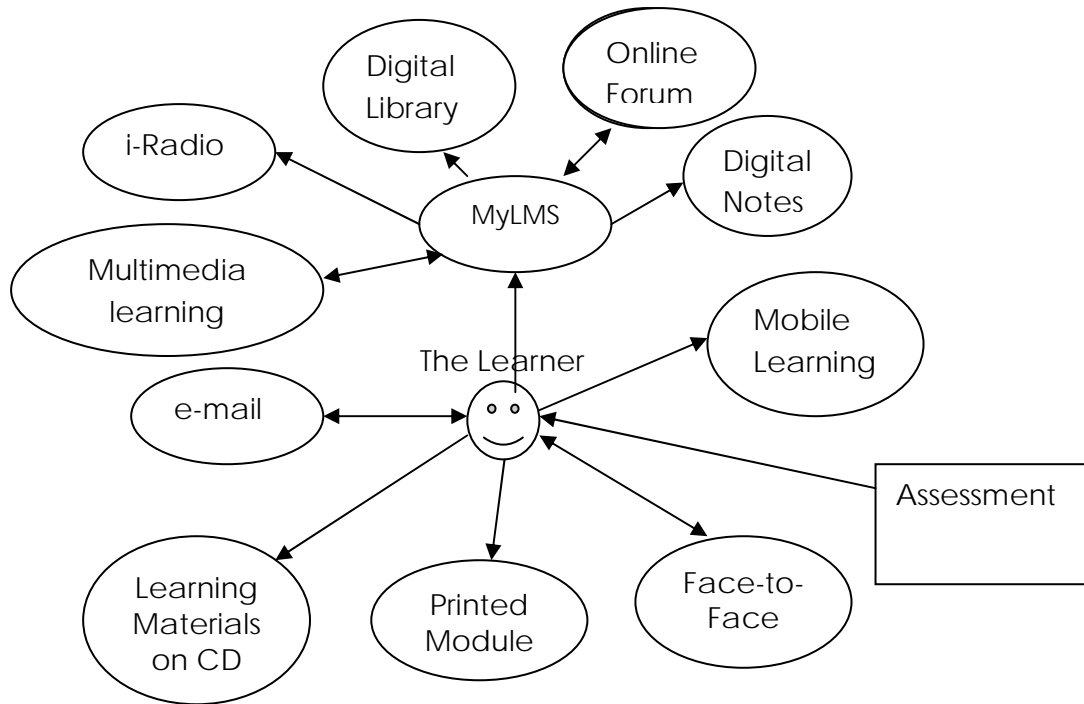


Figure 2: Current Learning Model of OUM

Based on Figure 2, the strengths and weaknesses of the current learning model of OUM can be identified as follows:

Strengths	Weaknesses
<ul style="list-style-type: none"> - With rapid technological advances in web-education, learners have the advantage of accessing learning materials online (no classroom boundaries for learning) - Uniformity in content delivery and empowerment of a geographically dispersed group of learners to participate in a collaborative learning environment with tutors and peers - Cost-effective system for learners due to time saving and flexibility using web learning interaction (myLMS) - E-learning is increasingly being looked to by many ODL institutions as an economical way of expanding their services, widening opportunities for students around the world, and making effective use of the emerging technologies 	<ul style="list-style-type: none"> - The existing model has many learning objects but is organised in a dissociated manner. - The lack of mechanisms for incorporating learning materials on ODL courses creates a situation which a large-scale study becomes difficult to conduct and vulnerable to misinformation - The learners are expected to maintain regular communication with one another through email and online forum (myLMS) in discussing and solving tutorial questions posted by tutors - Time lag, missing feedback and difficulties in conducting practical - Not all the items available on the web are identified or can be retrieved easily by a single search engine - Sacrifice the spontaneity and interactivity associated with synchronous modes of instruction.

These strengths and weaknesses are examined here to reflect a conceptual model for integrated ODL on demand designed to stimulate the learners' appreciation and understanding of the need for developing effective web-based learning. The issues and challenges discussed are essential aspects of ODL learning to maximise the many learning possibilities offered by the web-based in OUM's efforts to enhance effective learning.

Proposed Conceptual Model for Integrated ODL on Demand

The rationale for the proposed conceptual model for integrated ODL on demand is to adopt the philosophies of ODL which include constructivist, collaborative, interactive, self-managed and learner-centred (Latif and Bahroom, 2003). As the bulk of the ODL learners' study time is spent on self-managed learning, ODL institutions require web-based environments that support multiple representations of the educational content to involve learners in active learning activities. This is particularly important in overcoming the problems of learners being passive receivers of the educational content and the communication channels among tutors and learners remain asynchronous which was the main reason for the lack of direct communication that makes the achievement of common understanding and the exchanging and reasoning of ideas rather a difficult task.

Santally and Senteni (2005a) describe the concept of 'adaptation' or 'personalisation' as an important issue in research for learning systems. They proposed what they call adaptation to psychological factors. These psychological factors are cognitive style, learning strategy, learning modality and skills. Thus, it is imperative to have a system that is based on adaptation rules that match the learners' preferences and provide the learner with a set of learning objects matching to these preferences. Nurmi and Jaakkola (2005) recognise the importance in adapting learning objects to meet different needs of different users. However, they proposed that learners need to adapt to more than one single learning styles and objects if they were to become more competent.

The proposed conceptual model for integrated ODL on demand is a model that can be utilised for the teaching and learning of a range of both technical and non-technical courses. The proposed model's delivery mode is based upon learning through visualisation, interaction, collaboration, exploration and a host of possible alternatives. This conceptual model is perceived as an important means of access for learners particularly for those who have difficulties attending traditional face-to-face programmes. Saengsook (2006) argued that using technology in the service of eLearning provides invaluable opportunities for learners who do not have time to attend conventional classes to gain more constructive knowledge.

The proposed model would be able to meet the needs of a variety of learners not only to provide for timely and appropriate interaction between learners and facilitators but also among learners. According to Sadik (2004) constructing online learning environments requires designing and developing elements that would be able to deliver instruction, enhance the quality of learning, facilitate interactions and support the learner. He also proposed that the interaction component is designed to facilitate learner-tutor, learner-learner and learner-content interaction. More importantly, online learning is not just concerned with providing easy access to learning resources, anytime, anywhere, via a repository of learning resources but is also concerned with supporting synchronous and asynchronous communication among learners and facilitators.

The proposed model also aims at greater tutor-learner interaction, engaging learners with the course materials on regular basis and eliciting feedback from learners. By adding some unique features made possible by the technology, the change in the ODL learning strategy would therefore:

- Involve learners in the learning process
- Deliver content where learners and facilitators would actively engage in online discussion and forum

- Develop the sense of online community within the course
- Assess learners on an ongoing basis (Assessment activities with learning support)
- Provide feedback more regularly
- Address learning needs and improve teaching through eliciting learners feedback
- Personalise the learning environment by establishing a tutor presence and tutor-learner interaction

ODL requires a system that can support instant delivery of learning and guiding materials to learners and enables facilitators to guide and assess their learners both synchronously and asynchronously. Most importantly is to have a web-based course management that provides greater tutor-learner interaction, engaging learners with the course materials on regular basis and eliciting feedback from learners.

The elements of the proposed integrated model for ODL on Demand

Although establishing online learning environments and delivering courses via the web is growing rapidly, many facilitators face difficulties in using the available tools and technologies to organise instructional content into well crafted teaching systems that support learning. To design effective web pages and content, Harbeck and Sherman (1999) argued that instructional designers and tutors should take close look at the design of the user-interface, guiding approaches, methods of encouraging interaction among learners and involving students in beneficial activities and individualised learning.

As described by Neo (2007), constructive learning places emphasis on the learners and propounds that learning is affected by their context, beliefs and attitudes. In this mode of learning, the learners are encouraged to find their own solutions and to build upon their prior knowledge and experiences. He also perceived constructive learning mode as a learner-centred instructional model whereby students become active learners and take more responsibility for their own learning, determine their own learning needs, set their own goals, monitor their own progress and determine how to reach the desired learning outcomes in a collaborated teaming environment. In this respect, the tutor or facilitator is no longer perceived as the sole authority of learning, but, rather, as the person to facilitate learning, guiding and supporting learners' own construction of knowledge. However, Nurmi and Jaakkola (2005) argued that the typical learning object approach stresses learning content and its effective delivery to the learner instead of supporting knowledge construction, and neglects the essential nature of learning processes and learner's personal knowledge construction. They also suggest that the prevailing learning object approach takes teaching perspective whereas according to the constructivist ideas the focus should be based on learning perspective.

In enhancing and moving the ODL learners learning process forward, it is important to overcome the weaknesses of the current learning model which consists of many learning objects but organised in a dissociated manner.

The proposed integrated model as shown in Figure 3 highlights the importance of having a web-based system that provides its learners with a learning organiser. The learning organiser is a system that integrates the learning objects through one interface and highly interactive based on guided explorer learning and features that allow a user-friendly learning environment. Its functionality includes:

- Inter-connected learning objects, systematically organised, guided by module content requirements to facilitate effective learning via guided exploration.
- The web-based learning system is personalised for authentic learning.

- Learning objects are highly interactive, yet easily assessable and manageable, guided by the learning organiser, and this provides greater motivation to the learners.
- Virtual learning environments directly interacting with the learners.
- Learning tools that are organised into several learning events such as tutors and other guided instruction, exercises (self-tests) or other independent work, set-book examinations, seminars and so on.

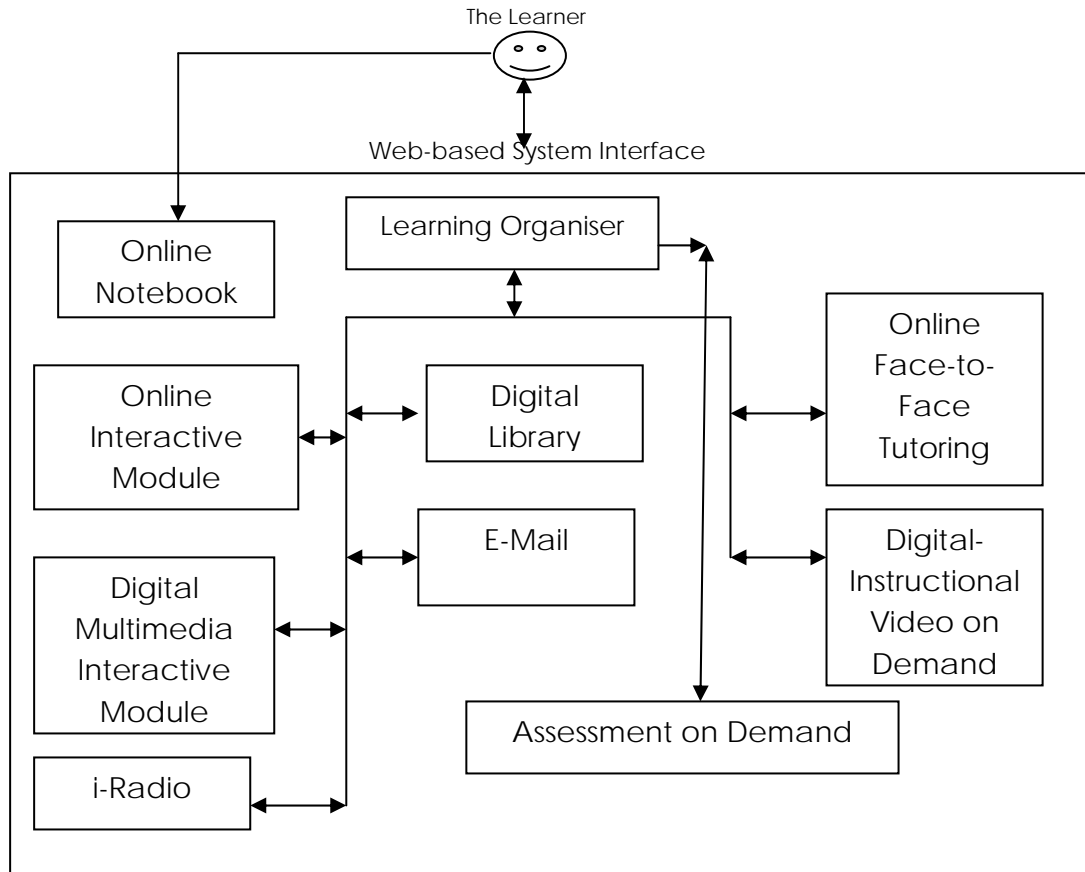


Figure 3: Proposed Integrated Model for ODL on Demand

Among the proposed learning objects to be included in the integrated web-based interface include:

1) Online face-to-face tutoring

Web conferencing allows groups of learners to learn online through virtual classrooms or tutorials based on real-time. It also offers an interactive discussion that enables facilitators to personalise online courses by holding live online tutorials as well as lectures based on so called 'video on demand'.

2) Online interactive modules

Online interactive modules can be in multiple forms of media such as hypertext, links, graphics, animation, real-time audio and video and other hypermedia objects (such as Java applets and Macromedia Flash presentations) to improve presentation and involve students in active learning activities. The advantage of this element of mix media is that it is able to encourage learners away from attending face-to-face classes and towards practicing,

discussion and articulating, thus optimising the opportunities for self-managed learning. These online modules will provide the learners with a complete and up to-date picture of the subject matter including main concepts links to other web resources.

3) Online assessment on demand

Online assessment includes self-test, quizzes, exercises and other forms of assessment similar to traditional textbook exercises but in web-based which is found to be an interactive component in each topic provided to stimulate learners' thought and action, encourage them to ask questions, motivate them to learn and help them know whether they understand the main concepts and ideas in the topics concern. Self-assessment questions can be in the format of multiple-choice, matches, true-false and filling the blanks. Appropriate feedback then can be forwarded to the learner's browser to let him or her know the right answer at the same time. This form of assessment allows more interaction between the learner and the content and between the learner and the facilitator. Despite evaluating learners' achievement online assessment also help the tutor or facilitator to keep learners notified of their progress and mastery of the course content as well as encourage learners to ask the tutor or facilitator and motivate them to learn.

4) Online notebook

Sadik (2004) describes learners' notebook as an online notebook that allows the learner to save any course related information such as comments, exercises, tutor's feedback, etc. in a personal and secure file in the Wired Class server, using his username and password. However, he argues that developing a 'notebook' is a relatively difficult task and not found in many learning environments. The advantage of this element is that it allows the learners to transfer and keep their information in the Web server and retrieve it again using their Web browsers only.

The proposed web-based system interface (as illustrated in Figure 3) creates mechanisms that allow its stakeholders to access the vast repository of learning objects and adapt them to individual learner needs. The system provides more 'hands-on' learning experience, learner-centred, interactive learning and increasing control over the learning process. As such, web-based learning therefore provides easy access to the content and yields additional benefits in terms of access is available anytime, anywhere, around the globe as well as learning objects that support on-demand and personalised learning. More importantly, ODL requires a model with a structure that facilitates adaptive learning environments. This is where sources are designed based on instructional design and media, delivered in various forms including print out, audio or video and accessed in different learning environment such as at workplace, home, tutorial class and learning centre. As such the enhanced integrated model may take the view that learner motivation for learning is similarly increased.

Figure 3 depicts the Integrated Model for ODL on Demand that derives from the discussions on blended learning technology and objects. The learning objects incorporated can be used to support instructional strategies as well as enables tutors and learners to use learning object innovatively to fulfil their teaching and learning needs respectively. The integrated model can also offer interesting new possibilities to implement constructivist learning environments and engage learners with meaningful learning activities so called learner-driven and constructivist-oriented activities. It recommends that pedagogical objectives or learning objects and activities should drive the approaches that ODL institutions use in instruction. It also suggests that blending or integrating these learning objects, activities and approaches within a model might be most effective for and appeal to a wide range of learners. With an interactive web-based adaptive learning environment, ODL not only focuses on learners' learning preferences and offers contents matching only a specific learning style of learners, but most importantly encourages the use of different media representations to support the balance between synchronous and asynchronous communication.

The web-based system can be used to support and simulate synchronous teaching environments which can further enrich the learning experience among learners in multiple ways by:

- providing support in terms of lectures simulations, case discussions and problem solving particularly for technical or quantitative courses.
- serving as a platform for ODL learning (with the use of audio and video as well as chat, web-board and interactive web-based video technology) in delivering presentations to face-to-face and online learners.
- building interactive questions or quizzes (self-test) right into the web pages allowing learners to respond to interactive quizzes online with the answers being correlated immediately (learners receive immediate and meaningful feedback).
- enabling real time or almost synchronous discussion (through text-based technologies such as chat-rooms and web boards or full video and audio interaction).
- guiding ODL learners from widely dispersed geographic through interactive audio and video technology.
- enhancing morale and motivation through providing accessible, timely and individualised learning for learners.
- attracting and retaining learners by providing effective learning that meets the needs of learner's demanding schedule.
- providing conducive learning environment through interactivity of the web-based learning.

Limitations

However, the full implementation of the proposed learning organiser based on a web-based system interface is perceived to face the following challenges:

- Additional software cost that involves an expensive process to have to upgrade computer software and peripheral equipment. Furthermore, programmes may be delayed if costs are viewed as prohibitive
- Experience and knowledge of the instructor or facilitator is vital. A facilitator must know the elements that go into creating an effective online learning experience. He or she may require time to enhance their pedagogical skills in designing, implementing and evaluating technology-mediated learning activities. In addition, support staff with expertise in designing instruction for web-based environments would be needed to assist tutors with the pedagogical and technical concerns that are certain to arise as tutors work toward integrating more web-based learning events and activities into their instructional programmes
- Training is essential if one's computer literacy is not up to scratch and it may take some time to fill in the knowledge gaps and to become a proficient online course developer and instructor or facilitator. Facilitators will also need additional time to develop the technical skills required to use the more advanced features of the proposed integrated model
- Learners require IT competency and positive attitude against the use of various learning objects in the learning organiser as well as time constraint for working adults
- Continuous monitoring and collection of feedback from the learners, which should become the basis for revision of learning objects in relation to course content and materials

- Bandwidth and congestion problem

However, pointing out these elements does not mean that all of them must be available in any web-based system learning environment. Developers and instructors could choose the appropriate components they need or modify them according to the course objectives, learners' needs, costs and other factors relevant to the ODL institution.

Conclusion

ODL has created tremendous opportunities for a wide spectrum of learners in a learning environment that is accessible to all. However, it is vital that ODL institutions adapt to changes in its learners' learning experience and needs. The proposed conceptual model for integrated ODL on demand suggests that ODL institutions is capable of achieving its learning goals and outcomes by taking into account the direct elements to enhance quality of ODL. Furthermore, it posits that a major benefit of multiple learning objects in a learning organiser is that they allow learners to experience learning in ways in which they are most comfortable, while challenging them to experience and learn in other ways as well. This model therefore aims at achieving the objective of ODL by ensuring that the learning needs of all learners both young and adults are met through equitable access to appropriate learning and life-skills programmes and through harnessing new information and communication technologies to help attain those goals. Therefore, with the proposed conceptual model, ODL is able to promote critical thinking, and active learning as well as encouraging learners to analyse, synthesise and draw value judgments of a particular course. The model presents unique opportunities for teaching and learning in more flexible and user-friendly environment and stimulates an individualised form of learning at the higher levels of the cognitive domain. As such, the approach places less emphasis on the facilitator and more on the learner and that positively encourage and make ODL a distinct and more attractive learning environment. This can be supported by technology for providing learners with effective access to advanced knowledge in the pursuit of ODL as an ongoing lifelong process. Thus, allowing any ODL institution including OUM to widen access for education using a web-based system interface that is integrated, accessible, user friendly and supports both learners and facilitators; conceptually it is a '*all in one; one in all*' model for ODL on demand.

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