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DESIGN AND DEVELOPMENT OF EFFECTIVE OER: USEFUL PEDAGOGICAL PPRINCIPLES

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Abstract

Open Educational Resources (OER) are materials used to support education that may be freely accessed, reused, modified and shared by users. OER usually employ a range of media and other resources contained in digital media collections from around the world. OER need to be very carefully structured so that the users can follow a logical learning path and get an engaging, interactive, and enjoyable learning experience. To make this happen, OER developers need technical expertise and sufficient knowledge about pedagogic principles. Present trends reveal that a number of people from different walks of life are designing and developing OER. It is perceived that most of them are developing OER without undergoing any specific pedagogical training, and in the absence of proper knowledge and training about pedagogy, one can not be sure that the produced OER will be of superior quality. Therefore, it seems essential that besides technical expertise, developers must have sufficient knowledge about useful pedagogic principles. There are number of pedagogic principles that can be employed by developers to design and develop engaging and interesting OER. In this backdrop, present paper discusses and details about a number of pedagogical principles for design and development of effective OER.

Keywords- *OER, OER designing principles, OER development practices, Pedagogical principles for OER*

Introduction

Now-a-days Open Educational Resources (OER). movement is making significant gains in educational processes but much is not known about who is actually producing and using OER, as observed by Hylén (2009. p.131), "Of course, institution-based initiatives, like the OCW programmes at different universities, use their own staff to produce their material; and some of them, such as MIT, try to continuously evaluate who their users are. But, as a whole, very little is known about the users and producers." The researchers are not in a position to pinpoint the users and producers of OER but they are sure about the purpose of its usage. The purpose of using OER in education is to enhance a kind of learning that enables the development of both individual and social capabilities for understanding and acting (OECD, 2007). To meet these objectives and expectations, we need properly designed, carefully structured and pedagogically sound OER.

Design and development of effective OER: Useful pedagogical principles

Currently, the majority of OER development is undertaken on a project basis, and often with donor support (D'Antoni and Savage, 2009). OER usually employ a range of media like words, pictures, audio, video, graphics, animation, etc. and need to be very carefully structured so that the users can follow a logical learning path and get an engaging, interactive, and enjoyable learning experience. To make this happen, OER developers need technical expertise and sufficient knowledge about pedagogic principles. Present trends reveal that a number of people from different walks of life are designing and developing OER. It is perceived that most of them are developing OER without undergoing any specific pedagogic training, and in the absence of proper knowledge and training about pedagogy, one can not be sure that the produced OER will be of superior quality. Therefore, it seems essential that besides technical expertise, developers must have sufficient knowledge about useful pedagogic principles. There are number of pedagogic principles that can be employed to design and develop OER. Among these principles, following can be of immense help to developers for designing and developing highly interactive, engaging, and effective OER.

(i)   *Visualize about the users*

Before developing the OER material, developers must visualize the potential users in their mind. They are required to understand the users profile and their intention to use the resource. Visualizing about possible users is instrumental to see the issues from the user's point of view and to put appropriate questions and interactions in the material. This awareness will help the developers to keep the content relevant to the needs of users and to build appropriate package. Most importantly, visualization about users will be helpful for developers to overcome abstraction as OER has limited scope for face to face contact and constructive feedback.

(ii)   *Customize the learning needs of users*

The ability of the developers to customize learner needs is very important for developing useful OER. Therefore, developers are required to assume that what the users already knows about the topic and what will be their learning needs. The useful practice for developers in this regard will be to get some experience as a user before producing OER. Past experiences of undergoing e-courses, e- sessions and e- instruction will be handy for developers to develop courseware from a user's perspective. This practice will help developers a lot to know about users' likings and disliking. The simple principle in this regard will be that while developing OER material, think as if you are a user and this package is designed to satisfy your individual learning needs.

(iii)   *Learn about the learning states*

People learn in different ways. Developers can not exactly predict that how the users are going to learn but they can make ways about their learning states. The learning state or condition of an individual makes it possible for him or her to engage profitably in a given learning activity. The learning

readiness of individual depends on factors as past experiences, cognitive development, affective state, and motivation. It also depends on the instructional methods and materials to be used. The developers must have knowledge and understanding about these characteristics or circumstances before proceeding on a given course of action. To keep pace with the changing expectations of users, OER developers must understand the psychology of learning and update them about evolving researches on human learning and learning states.

(iv)   Foresee instructional challenges

It is very important for developers to understand the challenges of OER instructional model. These challenges can be in terms of technology, diverse audience profile (experience and motivation levels), cultural diversity, learning complexity, and so on. The trick is to relate the online model with a classroom situation, and think of parallel methods in the online context for meeting the above stated challenges. Developers must also remember that OER are learner centered in nature and normally works on the principle of direct interaction between users and content. The greater challenge before developers in this context is to hook the user, sustain the user, and satisfy the user. Developers can overcome these instructional challenges by understanding the science of instruction that calls for a thorough understanding of how instruction works, how it is encoded and consequently decoded by the users.

(v)   Emulate technology of instruction

Technology of instruction plays a pivotal role for designing of OER. OER needs to be designed for diverse groups of users and their learning needs. The instructional aspects decide that how users will perceive the OER and provide the opportunity for developers to interact with users through learning materials. There are many instructional techniques to make learning experiences memorable, like using interesting contexts, novel situations, real-world or authentic environments, problem-solving scenarios, simulations, engaging themes, engaging media, drill and practice and interface elements. The developers must use these and other appropriate instructional technologies with reference to what is to be taught and how to provide meaningful experiences and the knowledge to the users.

(vi)   Choose appropriate instructional design

Often developers feel that adding a number of media like words, pictures, audio, video, graphics, animation, etc to the package would make an interesting instructional design. While a graphic-intensive instructional design might appeal to the novice learners, but for the serious and focused one, this will not work. True, these elements make the package glamorous but on the contrary erode the sheen out of the learning activity. Considering this, developers must understand that excessive use of media elements serve as distracters in the learning process. They must also keep in mind that real essence lies in a balanced use of media elements to enhance learning. The underlying principle is that OER developers must use a design that avoids unnecessary graphic and media elements.

(vii) Ensure instructional interactivity

Instructional interactivity is usually defined as interaction that actively stimulates the user's mind to do those things that improve ability and readiness to perform effectively. The purpose of instructional interactivity is to wrestle intellectual laziness; to reawaken interest in learning; to strengthen ability to learn; and to provide an optimal environment to learn. Good interactivity help users to think, synthesize new information, and integrate their knowledge. Instructional interactivity also contributes to self-confidence and tests learner knowledge whenever they might like a progress check. Therefore, developers are supposed to produce such OER having high level of instructional interactivity. They can do it by adding games, simulations, demonstrations and mini quizzes in the packages.

(viii) Include interesting exercises

The foremost challenge before developers is to make packages easy to use, engaging and interactive. One way to make this is to have quizzes and surveys in the lessons. Utilizing little games or activities that user can do will make the resource more interesting. Developers must understand that these exercises will bring meaningful experiences and knowledge in the resources. Employing an exercise or game that requires participants to send individual messages to one another triangulates the learning. Adding games and simulations to resources arouse interest in users that is quite essential for effectiveness of OER. Simulation ensures users to tightly bind to the content and honing learning domain of psychomotor skills. For this purpose, developers can put web addresses of simulation exercise and "hands on" software interaction in the resources.

(ix) Engage users to practice and learn new things

Assessing users' skills and tailoring the resource to accommodate the broad range of skills is must to prepare an effective OER. It demands the designing of resource from the beginning with the target skills in mind because it is difficult to add on or change approaches once the resources is in public domain. Therefore, developers build in ways from beginning to actively engage the users. There is no need to get too caught up with static tasks. There needs to be motion and action to maintain attention. Inclusion of good practices and breaking the material into small learning modules makes it easy to absorb. Developers must understand that encouraging users to find new sources of information is helpful to make them engaged. Mentioning useful website(s) that are relevant to the content will also be a helping tool to make resources more useful.

(x) Ensure correct and effective delivery of content

The content and its delivery are crucial to assure the effectiveness of OER. Therefore, developers must know the content and make sure that content is accurate. Taking help of subject matter experts is essential for this purpose. Checking the material, knowing what you are going to tell, how you are going to tell it, and how much time it will take are fundamentals of effective content delivery. Developers are advised to think about users' need and accordingly

apply the relationship between text, sound, motion and graphics. Developers can put "icebreaker" question or a quiz to break the monotony of content. Developers are also advised to continuously review their work to gain perspective and to check that resource is on the right path.

(xi)   Create engaging learning environment

Creation of right environment is instrumental for success of any instructional activity. In case of OER, environment facilitates the locating of information in easiest way. Developers must understand that learner interfaces should be meaningful without having to memorize symbols, terminology and procedures. Developers must also understand that little anxiety and discomfort can actually be helpful for learning but they should come from the user's desire to do their best and not from fear and frustration with the interface. Developers can fulfill this demand by providing useful and thought provoking learning experiences. The developers must remember that right amount of information, delivered in the right way, for the right reason, and aligned with the right deliverables produces good environment for learning.

(xii)   Provide good learning experiences

The vital aspect of OER is to provide good learning experiences. Learning experiences are required to be meaningful and memorable. If a user does not understand the content, then that user will not gain from the experience. If users do not see the meaningful implications of learning prescribed tasks, then applicability of such tasks will be of little help to user experience. Well-designed OER is expected to be meaningful for each user. The developed resources must be sensitive to users demand and appropriate to their needs and levels of readiness. To make this happen, developers must concentrate to select appropriate activities and engage users in experiences that are likely to be meaningful.

(xiii)   Follow layman approach of instruction

The developers must apply 'layman approach' of instruction. Layman approach works on the principle that you are able to teach a person that does not know anything about the matter. Following this approach, developers can provide more than one way of learning the content for users. Developers must also understand that line after line of text makes learners grow bored and the instructional message gets lost. Therefore, using graphics, non-offensive humor, and interaction (questions, drag-and-drop) will help to keep the developed OER interesting even for those users who are not familiar with the content.

(xiv) Design your package thoroughly

The designing of the OER is most crucial. Instructional design for OER is not a re-format of traditional classroom delivery. The developers must recognize the differences and embrace them. Sketching a good design on paper before committing materials to the learning platform / virtual learning environment will be a helpful practice in this regard. This design, if done properly, will certainly allow seeing which tools will be needed to get the best possible solution for

users. The developers are also advised to read course scripts aloud to ensure that they sound conversational. Minimizing the amount of text on course pages and where possible, using graphics to summarize and emphasize key points will provide a good design.

(xv)   Keep the package simple and interesting

Learning can be enjoyable by keeping it simple. Developers must take small steps and write in a conversational tone to make it fun, and interesting. Conversational tone prevents feeling of isolation. OER is different from traditional learning therefore interactivity is must to make it interesting. Relying too heavily on assigned readings and book-based tutorials will leave learners with bad taste. Developers can give added value to OER with resources such as- interactive media and educational games, relevant essays or articles, and quick-reference guides. Developers must think that animations and heavy images do not make OER of better quality. The useful principle in this regard will be to keep package short, make it easy and deliver very small snippets of information. This will help to build prior learning environment among users.

Conclusion

A search of available literature about OER reveals two interesting facts. First, there are number of resources available regarding technical aspects of producing OER, second, there are hardly any resource that talks about pedagogical aspects of OER development. In absence of practical guidelines about use of pedagogical principles, developers often struggle to produce pedagogically sound OER. Considering this dilemma, present paper outlined and discussed a number of useful pedagogical principles applicable for design and development of OER. Researcher hopes that discussed principles will help the developers to design and develop effective OER for schooling and learning purposes.

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