

Implementation Of Instructional Design In OER Materials: A Conceptual Discourse

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Abstract

Learners looking for relevant learning materials generally scan available OER on their appropriateness. Learning materials are to be shown in their authentic/daily context in which they are needed. This approach also partly responds to what is called the localization problem of OER. Materials should be ‘culturally portable’ or should at least give insight in which this information fits. For most OER nowadays that is not the case yet. That makes a description of the situatedness even more important. Hence in this paper, relevant instructional designs are tested to judge the efficacy of them for constructing OER materials. This paper also deals with the ‘whole chore experiences’ (similar to Van Merriënboer’s whole tasks experience) or importance of learning chunk in OER. The authors of this paper also tried to access validity of OER material as ‘providing meta-information’ and leads to make OER richer and create a knowledge base that involves a ‘media mix’ by using free-to-use tools (open source software). In addition to that, this paper postulates a meta-rule which concerns the integration of volitional design and management. Learning with OER, or speaking more general, learning with multimedia learning environments oftentimes becomes complex due to its very nature. There are some phenomena such as ‘lost in Hyperspace’ or ‘cognitive overload’ that have been widely reported in the literature to disadvantageously affect the learning process. Consequently, learners’ attention gets distracted (e.g. by a fancy animation) and his motivation wanes. Therefore, in this paper it has been tried to depict that, learners need to be equipped with volitional tools and strategies. This is to be seen on a meta-level since it is targeted on the whole process and can occur virtually at any given moment.

Keywords: OER, Localization, Portability, Experiences, Media-mix, Volition

1. INTRODUCTION:

1.1 Definitional Analysis and variants of OER

The term Open Educational Resources (OER) first coined and came into use at a conference hosted by UNESCO in 2002 (wiki2.org). The most used definition as found in the relevant literatures is: “open educational resources are digitised materials offered freely and openly for educators, students and self-learners to use and reuse for teaching, learning and research”; and it must have the following characteristics (5Rs):

- ✓ Retain: Make and own a copy
- ✓ Reuse: Use in a wide range of ways
- ✓ Revise: Adapt, Modify and Improve
- ✓ Remix: Combine two or more
- ✓ Redistribute: Share with others

A wide variety of objects and online materials can be classified as educational resources, from courses and course components, to museum collections, to open access journals and reference works, etc. Daniel and Paul (2006) opined that “these resources must be accessible, appropriate, accredited, and affordable”. It not only covers content; also the learning and content management software and content development tools, and standards and licensing tools for publishing digital resources, which allow users to adapt resources in accordance with their cultural, curricular and pedagogical requirements are also come under its purview. So, the OER may broadly be categorised under the following three types:

1. **Learning content:** Full courses, courseware, content modules, learning objects, collections and journals.
2. **Tools:** Software to support the development, use, reuse and delivery of learning content, including searching and organisation of content, content and learning management systems, content development tools, and online learning communities.
3. **Implementation resources:** Intellectual property licenses to promote open publishing of materials, design principles of best practice and localised content.

1.2 Importance of OER in present day teaching-learning process

Today’s teaching learning process is unambiguously a learner centric process, or to be more precise, it is a self-regulatory process. And OER play a pivotal role in achieving self- regulated education. According to Materu (2004), ‘the present decade can be called the o- decade (open source, open systems, open standards, open archives, open everything) just as the 1990s were called the e-decade’. A huge variety of educational

resources are available online nowadays. It is said that the information produced in two years these days supersede the whole amount of information produced during the period of human civilisation till the year 2003.

2.0 Problems associated with available OERs

Despite overwhelming acceptance of open educational resources in achieving self-regulated learning and training, the problems and challenges faced in accessing such resources should not be disregarded. The major challenges are mentioned below.

2.1 Media Mix

Information or contents nowadays are available enormously in different formats and through multitude of media, which in term of business is called Media Mix. A media mix is the combination of communication channels a business can use to meet its marketing objectives. For example, these may include, Newspapers, Television, Websites, or Social Media, such as Facebook or Twitter, etc. Combining these channels in a media mix may be effective to communicate with different types of customers. Open sourced free-to-use tools (open source software) extend further scope to ‘media mix’ deliveries of educational contents. This media mix and information catered affluent through these several media causes cognitive overload to the learners. In such a situation, multimedia learning environments oftentimes becomes complex due to its very nature. Learners once enthusiastic to self- regulated learning become exhausted and start feeling of “Lost in Hyperspace” thus the learning process are disadvantageously affected.

2.2 Context dependency

Another more obvious challenge with OER, like in any content in general, is the context-dependency of the learning content. Learners looking for relevant learning materials generally look into available OER on their appropriateness. A particular open resource may be used and reused several times, and that is also in different contexts. Context may diverge due to variations in cultural, social, ethnic economical, linguistic, etc. facts. Culture is central to any learning process. It is pervasive in people’s ways of knowing and responding to life. Learning is influenced by learners’ background knowledge and life experiences. Learning is socially constructed and mutually negotiated, and it cannot be transmitted. Learning materials are to be shown in their authentic/daily contexts in which they are accustomed.

2.3 Localisation Problem:

Localisation is a very important issue to be looked after as we are concerning of the utility of OER in self-regulated learning. Developing a learning module often reflects author’s contextual background, and may be critical to be used by the learners habituated in a

different context.

2.4 Lost in Hyperspace

In general, the "lost in hyperspace" phenomenon refers to any of the following conditions:

- Users cannot identify where they are in the web;
- Users cannot return to previously visited information;
- Users cannot reach to information believed to exist;
- Users cannot remember what they have covered; and
- Users cannot remember what key points they have covered.

The last point is worst. The others might have been bearable had users been able to get value from the experience, even though it is felt like being lost. Users really are lost; it is not just a superficial disorientation. The name of the problem, which we abbreviate LIH, is very appropriate! No wonder the most popular forms of system to design are computer games, where getting lost is made into fun- in the tasks for which hypertext is promoted, though, it is not fun, a point well made by Carroll (1982). Being disorientated or lost is one of the fundamental difficulties which users experience when trying to navigate within hypertext systems. So great is the problem that it has been estimated that about 60% of the research into hypertext systems has been devoted solely to this issue (Theng, Jones, Thimbleby, Road and Nq, 2000; Dix, 2012). Elm and Woods (1985) describe the difficulty as:

Getting lost in a display of networks means that the user does not have a clear conception of relationships within the system, does not know his/her present location relative to the display structure, and ends it difficult to decide where to look next in the system.

The problem does not appear to be directly related to the information content contained within the hyperspace. Elm and Woods (1985) gave users of a hypertext system a set of information retrieval tasks and found that the degree of lostness experienced by subjects was independent of their level of expertise in the information domain (a manual of emergency procedures for a nuclear power plant). As a result three different forms of being lost are outlined when speaking in terms of hypertext, as opposed to navigation per se:

1. Not knowing where to go next.
2. Knowing where to go, but not knowing how to get there.
3. Not knowing where they are in the overall structure of the document.

The problem therefore appears to be one of unfamiliarity with the structure of the document, as evidenced by problems of navigation and location, rather than the user.

2.5 Cognitive Overload

The new concern in the Information Age is cognitive overload. Cognitive overload is a term used to express the state that people, especially computer workers, experience as a result of distraction, stressful situations, multitasking, and data congestion related to increasingly sophisticated technologies. Presently, there is little information on the effects that cognitive overload have on computer professionals. Yet, the increase of the cognitive work demands is a common development that affects workers' health and well-being. More studies should be done on cognitive overload in order to make effective changes that would decrease the amount of stress and anxiety in human computer interaction.

2.6 Barriers to Open Educational Resources

From the empirical study and above discussion of problems and challenges created in accessing OERs, the barriers in the usage of OERs are identified as follows:

- 1) Internationalization, OERs may be available but in a different language;
- 2) Context dependent: it is difficult to separate the 'content' from the 'context' in an OER, thus it is difficult to decontextualize an OER and re-contextualize it to a different learning context/purpose;
- 3) Cognitive overload due to Lack of good examples/ best practice: "remixing" an OER is a difficult concept to grasp, especially as examples of remixing might be difficult to find or something you wouldn't tend to stumble across;
- 4) Digital divide: lack of digital literacy and lack of access to digital network implies no access to digital resources;
- 5) Lack of teacher's preparation and training in how to reuse OERs;
- 6) Distance from main stream teaching and learning practices and policy;
- 7) Curriculum alignment: OER may not fit specific curriculum, and vice-versa; curriculums may not be designed around an OER reuse/remix culture;
- 8) Plagiarism: to which extent reusing and remixing an OER can be perceived as a form of plagiarism?
- 9) Lack of technical support for teachers; institutionalized support i.e. a dedicated educational technologist team is considered important for promoting re-use within different educational institutions/contexts (relates to digital and socio-economic divides)
- 10) Copyright issues and different copyright jurisdictions: this is mostly about publishing original OERs, but it also relates to the ways in which an OER is 'translated' to different contexts/locations. It also hinders what other items, media objects can be added that are more relevant to a national culture / pedagogical context;
- 11) Lack of confidence: many teachers/tutors feel reluctant to reuse and publish their reused materials and "mess up" with someone else "good" design; one possible reason

may be, they feel that they tamper with something that was designed/published for a specific purpose/context; this relate with the Conceptual overload mentioned at point 2);
12) Lack of explicit learning design supporting the representation of resources and dialogue around their use in a particular context in terms of trying to illicit the implicit design of an OER and then needing to create a new design; if context/purpose and targeted audience alongside learning outcomes are not very explicit this makes more difficult to repurpose in a different context;

13) Lack of policy embeddedness and accepted institutional practices: OER use and re-use in mainstream educational institutions needs be legitimized by accepted national policies on education;

14) Issues of quality/legitimacy: some OERs are not considered worthy of using/remixing. Some advocates insist on putting ratings / quality and context indicators. That will enable tracing of use and perhaps stimulate re-use;

15) Lack of time: too much effort to put in reusing makes easier and faster to do it yourself from scratch;

16) Lack of tools to help deconstruct and reconstruct.

The above barriers in using OERs are identified. However, these may be minimised if meta-rules are followed in application of the method of instructional design at the time of developing open educational resources.

3 Role of Instructional Design in developing OER

Instructional design is concerned with understanding, improving, and applying methods of instruction. Instructional design as a discipline is concerned with producing knowledge about diverse methods of instruction, optimal combinations of methods resulting into models and situations in which each of these models is optimal. Sonwalkor (2001, p.2) defines instructional design as “a process that enables conversion of raw content into a structured distribution.” Tessmer and Richey (1997) defines instructional design as the “systematic development of instructional specifications using learning and instructional theory to ensure the quality of instruction”. It is a systematic process of planning educational content and delivery strategies to facilitate student learning for effective achievement of learning objectives (Tessmer & Richey, 1997).

Instructional Design is the systematic planning of instruction including needs assessment, development, evaluation, implementation, and evaluation of materials and practice which answers the following questions:

- What are the goals of instruction?
- What is the instructional strategy and medium?
- What should the tests look like? How will we evaluate and revise the instructional materials?

Role of educators in learner-centric educational environment is rather passive, not

an active teacher as we experience in regular classroom teaching. They become instruction developer. However, the motto is the same in both the cases, - to help learners in the process of their learning. They must follow the ABCD model while designing any instruction. Here,

- A= Audience= The intended learners
- B= Behaviour = What will they do?
- C= Condition= Under what condition?
- D= Degree= How well?

One of many important aspects for designing instruction, specifically for open and online educational content is Whole-Part-Tasking. Actually there are two separate models covering this aspect of instruction design, i.e. part-task model and whole-task model.

3.1 Whole-Part-Tasking

Part-Task Model: In traditional Lego/ Mechano-set approaches complex contents and tasks are reduced into increasingly simpler elements until reaching a level where instruction designers should know their learners attitudes, demands and prerequisite knowledge; they should help the instructor and learner, the practice of arranging content and media and also to help transfer knowledge between teachers and learners.

Whole-Task Model: Whole-Task Models are those models that apply a holistic approach in which complex contents and tasks are analysed in coherence and taught from their simplest, yet still meaningful version toward increasingly more complex versions.

3.2 Volitional Design and control

Volition means an act of making a choice, or decision; it originated from the Medieval Latin Stem 'volo' which means 'I wish'. Volition or will is the cognitive process by which an individual decides on and commits to a particular course of action. It is defined as purposive striving and is one of the human physiological functions. Deimann (2010) states it in his Volitional Design Model that it provides a theoretically-sound integration of basic principles of ID and current motivational and volitional approaches. Moreover, it suggests a systematic procedure for designing learning environments with special attention being paid to volitional requirements of the learners. When the learning environment provides choice and volitional control over processes, timing, challenge level, and outcome or product of learning tasks, learners engage in self-regulated learning behaviours. The volitional design process is highly valuable for OER since it is targeted at typical problems learner face during the learning process. Learning with OER, or speaking more general, learning with multimedia learning environments oftentimes

becomes complex due its very nature. There are some phenomena such as “Lost in Hyperspace” or cognitive overload that have been widely reported in the literature to disadvantageously affect the learning process. Consequently, learners’ attention gets distracted (e.g. by a fancy animation) and his motivation wanes. Therefore, we postulate that learners need to be equipped with volitional tools and strategies. This is to be seen on a meta-level since it is targeted on the whole process and can occur virtually at any given moment.

3.3 Situated Learning theory

Situated learning is a theory on how individuals acquire professional skills, extending research on apprenticeship into how legitimate peripheral participation leads to membership in a community practice. It is an instructional approach developed by Jean Lave and Etienne Wenger in the early 1990s and essentially a matter of creating meaning from the real activities of daily living (Stein, 1998; Bowers, 1999; Korthagen, 2010) where learning occurs relative to the teaching environment. This theory posits that learning is unintentional and situated within authentic activity, context, and culture. Situated learning is,

- **Authentic:** Real life experiences. The learner is “situated” in the learning experience and knowledge acquisition becomes a part of the learning activity, its context, and the “culture in which it is developed and used” (Oregon Technology in Education Council, 2007). Learning naturally occurs in a real life context. They become involved in a community of practice, obtain experiences within the context, and naturally achieve intended skills and behaviours.
- **Social:** Collaboration and interaction with the community. Learners form or “construct” their own knowledge from experiences they bring to the learning situation; the success of situated learning experiences relies on social interaction and kinesthetic activity.
- **Legitimate Peripheral participation:** Legitimate Peripheral participation entails that newcomers have broad access to arenas of mature practice (Herrington & Oliver, 2000).
- **Participatory:** Learning by doing knowledge that is gained. Knowledge is situated within the practices of the community of practice, rather than something which exists in simple and plain textual contents.
- **Can be ICT-enhanced:** Situated learning is learning in a context by actually doing in the existing culture. Sometimes providing such real-life situation tasking may become expensive, time-consuming, risky or hazardous, or may be impossible in some cases;
e.g. in the area of medical science, chemical experiments or cooking experiences. In such conditions, learners can experience real life tasking in their profession

through ICT-enhanced simulation, or games, or puzzles, etc. For online courses, such experiences embedded in the content, in fact do a lot in self-regulated learning

4.0 Conclusion:

Although we know that the description of all the postulated rules is short and probably can be explained more in detail we are hoping to clearly stress the assumption that systematic approaches from ID theory can be worthwhile in the field of OER. Openness in OER has to stand to the availability of resources and the possibility to add knowledge. Openness in OER must not mean 'it remains open whether you have learned valuable lessons and it remains to be seen what the quality of the materials was'. In a similar vein, it is important to adjust learners' attention and motivation to OER in order to avoid "Lost in Hyperspace" or cog Cognitive overload. Based on our introduced rules we are confident that the OER-movement will truly unfold its benefits.

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