Conceptual Article

Pedagogical Designs for Optimizing E-Learning

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ABSTRACT

E-learning is commonly referred to the intentional use of networked information are communications technology in teaching and learning. A number of other terms are also used to describe this mode of teaching and learning. They include online learning, virtual learning Distributed learning, network and web based learning. Fundamentally, they all refer to educational processes that utilize information and communications technology to mediate asynchronous as we as synchronous learning and teaching activities. On closer scrutiny, however, it will be clear the labels refer to slightly different educational processes and as such they cannot be use synonymously with the term e-learning.

Keywords: *E-learning, Online learning, Virtual learning, Distributed learning, Network-based learning, Web-based learning, Information and Communications Technology (ICT), Asynchronous learning, Synchronous learning*

INTRODUCTION

The term e-learning comprises a lot more than online learning, virtual learning, distribute learning, networked or web-based learning. As the letter "e" in e-leaming stands for the wor "electronic", e-learning would incorporate all educational activities that are carried out b individuals or groups working online or offline, and synchronously or asynchronously vi networked or standalone computers and other electronic devices. These various types or modality of e-leaming activity they are

1. Individualized self-paced e-learning offline
2. Individualized self-paced e-learning online
3. Group-based e-leaming synchronously
4. Group-based e-leaming asynchronously

Table - E-Learning modalities

Individualized self-paced e-learning *online*	Individualized self-paced e-learning *offline*
Group-based e-learning *synchronously*	Group-based e-learning *asynchronously*

Individualized self-paced e-learning online refers to situations where an individual learner is accessing learning resources such as a database or course content online via an Intranet or the Internet. Atypical example of this is a learner studying alone or conducting some research on the Internet or a local network.

Individualized self-paced e-learning offline refers to situations where an individual learner is using learning resources such as a database or a computer-assisted learning package offline (i.e., while not connected to an Intranet or the Internet). An example of this is a learner working alone off a hard drive, a CD or DVD.

Group-based e-learning synchronously refers to situations where groups of learners are working together in real time via an Intranet or the Internet. It may include text-based conferencing, and one or two-way audio and videoconferencing. Examples of this include learners engaged in a real-time chat or an audio-videoconference.

Group-based e-learning asynchronously refers to situations where groups of learners are working over an Intranet or the Internet where exchanges among participants occur with a time delay (i.e., not in real time). Typical examples of this kind of activity include on-line discussions via electronic mailing lists and text-based conferencing within learning managements systems.

E-learning pedagogies

E-learning can surpass many of the pitfalls of regular classroom training such as boring slides, monotonous speech and two-dimensional representations. The beauty of e-leaming is that the new software allows the creation of very effective learning environment. Web audio-video conferencing and live broadcasts enhance the interaction levels. To understand the

pedagogies let's look at the four categories into which e-learning falls. They are arranged from the most basic to advanced here.

i) Knowledge database

This is most basic form of e-learning. It provides explanation and guidance on various type of content. Knowledge database can be used in teacher education programs to:

- Provides step-by-step instructions to perform specific task.
- Extract knowledge on any topic by either typing a keyword or phrase or by making a selection from an alphabetical list.
- Organize knowledge in psychologically receptive from using clear headings with limited distracters, 3-D visuals, and screen friendly fonts, appropriate spacing etc.

ii) Online support

- It comes in the form of forums, chat rooms, online bulletin board or e-mail. As it is more interactive than knowledge database, teacher educator can use it for:
- Acquiring immediate answers and solutions to problems. Transmitting live messages instantaneously.

iii) Asynchronous training

It involves self-paced learning, either CD ROM- based, network-based, the internet o intranet-based. It is useful in education because

- It provides access to instructors through online bulletin boards.
- It has provision for online discussion and e-mail.
- It may be totally self-contained with links to reference materials in place of a liv instructor.

iv) Synchronous training

It is the most advanced type of e-learning. It is done with live instructor who facilitates the training. The main features of synchronous training are:

- Every one logs in at a set time and can communicate directly with the instructor and wit each other. You can raise your cyber hand and even view the cyber white board.
- It last for a set amount of time from a single session to several weeks, months or even years.
- It usually takes place via the internet websites, audio or video conferencing or even two way live broadcasts to students in a classroom, the main focus being linking learners and practitioners to experts.

The above four categorical levels of e-leaming facilitate application of any specific pedagogical approach. There are four fundamental pedagogical perspectives, which have historically influenced the approach to computer-based pedagogy and distance education too. The) continue to provide guiding principles for the pedagogy of e-learning. The four pedagogical perspectives are:

a) ***Cognitive perspective***

It focuses on the cognitive processes involved in learning as well as how the brain works.

b) ***Emotional perspective***

It focuses on the emotional aspects of learning like motivation, engagement, fun etc.

c) ***Behavioural perspective***

It focuses on the skills and behavioural outcomes of the learning process.

d) ***Contextual perspective***

It focuses in the environmental and social aspects, which can stimulate learning: interaction with other people; collaborative discovery and the importance of peer support as well as pressures are its integral part.

Pedagogical designs for optimizing e-learning

This concept of learning by doing" has been popularized, among others, by Roger Schan and his collaborators and it is at the heart of pedagogical designs that stand to optimize e-learning (see Schank, 1997). These pedagogical designs include "scenario based learning"

(see Naid1 Menon, Gunawardena, Lekarnge & Karunanayaka, 2005),"goal-based learning" (see Naidu, Olive & Koronios, 1999; Schank, Fano, Jona & Bell, 1994),"problembased learning" (see Barrows, 199L Hmelo, Holton & Kolodner, 2000; Naidu & Oliver, 1996; Naidu & Oliver, 1999), "case-based learning" (see Lynn, 1996: Rangan, 1995; Carrol & Rosson, 2005), "learning by designing" (see Naidu, Anderson & Riddle, 2000; Newsletter, 2000), and "role-play-based learning" (see Ip & Linser, 1999; Linser, Naidu & Ip, 1999). These pedagogical designs are grounded in the principles of constructivism and situated cognition, and in the belief that learning is most efficient and effective when it is contextualized and when it is based on real world or similarly authentic settings.

Scenario-based learning

A very good example of learning by doing is scenario-based learning. Scenario-based learning is a pedagogical design where one or more learning scenarios serve to anchor and contextualize all learning and teaching activities (see Naidu, Menon, Gunawardena, Lekamge & Karunanayaka, 2005). The scenarios in these educational settings are usually drawn from real life situations. They may be contrived but they aim to be as authentic as possible and reflect the variety and complexity that is part of real life situations. For the teacher and the tutor this scenario provides a meaningful context which can be used to explain abstract concepts, principles and procedures a lot more easily. For the learner, it serves to make learning relevant, meaningful and useful.

Typically a good learning scenario will reflect a common occurrence from the relevant field (see Naidu, Menon, Gunawardena, Lekamge & Karunanayaka, 2005). It may be a case, problem or incident that is commonly encountered in the workplace. Using such cases, problems or incidences from the workplace in the education of learners serves to more adequately prepare them for the workforce as opposed to focusing their attention on the mastery of the subject matter content. The use of such scenarios is particularly relevant and meaningful in professional education.

A typically good learning scenario will sound like a story or a narrative of a common occurrence. It will have a context, a plot, characters and other related parameters. It usually

involves a precipitating event which places the learner or a group oflearners in a role, or roles that will require them to deal with the situation or problems caused by the event. The roles that learners might be asked to assume are those that they are likely to play in real life as they enter the workforce. Attached to these roles, will be goals that learners will be required to achieve. In order to achieve these goals they will be assigned numerous tasks and activities, some of which may require them to collaborate with their peers and other relevant groups, if these are part of the intended learning outcomes of their subject. While these activities essentially serve as learning enhancement exercises, a selection of them could be made assessable and given a mark which would contribute to the student's final grade in the subject.

In order to attain the goals that learners are assigned in the scenario, and complete all the required activities, learners will have access to a wide range of relevant resources. These resources could include textbooks and other relevant reading material, multimedia content, and also experiences from the field of how expert practitioners have gone about solving or dealing with similar cases, situations, problems or incidences (see Schank, 1997; Schank, Fano, Jona & Bell, 1994).

Related pedagogical designs

1. **Problem-based and goal-based learning**

Of all learning by doing type pedagogical designs, these two designs are in fact most similar in orientation to scenario-based learning. In problem-based learning, a problem situation serves a the context and anchor for all learning and teaching activities (see Barrows, 1994). Problem-based learning begins with the presentation of a problem to students, which can be in the form of short video clip, a picture with text, or just text. Upon encountering this problem situation, students ar expected to analyze it and decide what needs to be done next. A critical feature of problem-'base learning is small group problem-solving and inquiry (Hmelo, Holton & Kolodner, 2000). Student work in small groups to analyze the presenting problem, make decisions on what needs to be done next, and act upon them to resolve the problem situation satisfactorily. In so doing they will have been expected to achieve the intended learning outcomes (see Naidu & Oliver, 1996; Schank, Fano Jona & Bell, 1994).

While problem-solving is implicit in problem-based learning, learners are not tole explicitly what is their role in the problem, or what they are supposed to do as they seek to analyze the presenting problem. In goal-based learning, on the other hand, they are told very specifically what i their role in the scenario and what they are supposed to do in order to resolve the problem satisfactorily. How they go about analyzing the problem to achieve a satisfactory solution to the problem is left to their imagination and relativity (see Naidu, Oliver & Koronios, 1999; Naidu /J Oliver, 1999). Both, problem-based and goal-based learning designs have been widely used in the study of medical, education and environmental sciences.

2. Case-based learning

In case-based learning, a case serves to provide the context and anchor for all learning an teaching activities (see Lynn, 1996: Rangan, 1995; Carrol & Rosson, 2005). Cases have been very widely used in the study and teaching of Law, Business, Accounting and Economics. In these instances, students are required to use the case to explore issues, concepts and problems that they at likely to encounter. Cases that stand to optimize learning and teaching opportunities are those the, have the richness, complexity and variety that is embedded in real life situations and encounters. It therefore most important that the cases that are selected for study and teaching are carefully selected to match the intended learning outcomes for the subject.

3. Learning by designing

In learning by designing, the design task affords the essential anchor and scaffold for all learning and teaching activities (Newsletter, 2000). In this learning design students are required to engage in a learning activity which comprises conceptualizing and building something. This is a common learning and teaching activity in the study of architecture, and engineering sciences. As in goal-based learning, in the case of learning by designing, the goal is made very clear to the students. How the students chose to pursue that goal and achieve the targeted learning outcomes is left to their imagination and creativity (see Naidu, Anderson & Riddle, 2000).

4. Role-play-based learning

In role-play-based learning, the role-play provides the anchor and scaffold for all learning and teaching activities (see Ip & Linser, 1999; Linser, Naidu & Ip, 1999). Role-play is widely

used as a valuable learning and teaching strategy in social sciences and humanities subjects where very complex processes are prevalent. This learning design comprises the playing out of identified roles by learners which is followed with reflection upon the activity and its analysis in order to focus attention on the expected learning
Outcomes for the study.

CONCLUSION

It is widely acknowledged that the role and influence of media (i.e., information and communications technology) on learning and teaching is optimized especially when it is skilfully integrated into the educational experience (see The Cognition and Technology Group at Vanderbilt, 1991: Schank & Cleary, 1995; Schank, 1997). For this to happen we need to focus our attention foremost, on the careful design of the learning experience rather than the presentation of the subject matter content or the technology. This means careful orchestration of what the learners are going to do in the learning environment.

- Clever use of media can serve to motivate learner's interest.
- Information and communication technologies provide various opportunities for Capturing and representing real-world scenarios.
- Certain media (such as video) has attributes that are especially valuable for capturing authentic contexts and situations from the real world.
- Skilful integration of media and teaching methods is critical in the optimization of learning.
- This integration can be achieved through pedagogical designs such as: scenario based learning, problem-based learning, case-based learning, role-play based learning, and design-based learning.

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