A Review Study on E-Learning for the Empowerment of

Teaching and Learning in Higher Education

*V.Karamchand Gandhi

Assistant Professor,

Department of Computer Science,

Bharath College of Science and Management,

Thanjavur, Tamil Nadu – South India.

Mobile : +91 9626657564

*E-Mail: vedhagandhi@gmail.com

Abstract

The convergence of the Internet and learning, or Internet-enabled learning, the use of network technologies to create, faster, deliver, and facilitate learning, anytime and anywhere and the delivery of individualized, comprehensive, dynamic learning content in real time, aiding the development of communities of knowledge, linking learners and practitioners with experts. These are the fundamental definitions of e-learning. With good design and delivery, e-learning does all these things. But, at its heart, it is, simply, learning. E-Learning has to keep the people it's designed for in mind. How do we learn? How do we acquire and retain skills and information to help us develop? Only when we address individual learning styles can the "e" in e-learning factor in. Then the technical side—the electronic delivery—can be adapted to the learner. In this paper, the basic ideas of e-learning, modalities of e-learning, media influences in e-learning process and various pedagogical designs of e-learning are emphasized.

Keywords: Individualized self-paced e-learning online, Individualized self-paced e-learning offline, Group-based e-learning synchronously, Group-based e-learning asynchronously, Scenario-Based Learning, Case-Based Learning.

1. Introduction

E-learning is commonly referred to the intentional use of networked information and 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 well as synchronous learning and teaching activities [5]. The term e-learning comprises a lot more than online learning, virtual learning, distributed learning, networked or web-based learning. As the letter "e" in e-learning stands for the word "electronic", e-learning would incorporate all educational activities that are carried out by individuals or groups working online or offline, and synchronously or asynchronously via networked or standalone computers and other electronic devices.

2. Modalities of E-learning activity

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. A typical 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-video conference.

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

3. The flexibilities of E-learning Technology

A key attribute of information and communications technology is its ability to enable flexible access to information and resources. Flexible access refers to access and use of information and resources at a time, place and pace that are suitable and convenient to individual learners rather than the teacher and/or the educational organization [2].

The concept of distance education was founded on the principles of flexible access. It aimed to allow distance learners, who were generally adult learners in full or part-time employment to be able to study at a time, place, and pace that suited their convenience. The goal of distance education was to free these learners from the constraints of conventional residential educational settings. They would not be required to live or attend lectures in locations away from where they may be living and working. The printed distance study materials, which each distance learner received, would carry the core subject matter content they would need including all their learning activities and assessment tasks. Students would be required to complete these tasks, submit their assignments and take their examinations within a set time frame. While these printed study materials allowed distance learners a great deal of freedom from time, place and pace of study, it had its limitations. For one thing, non-printed subject matter content and simulations etc. could not be easily represented in print form.

Access to information and communications technology changed all that as it offered a range of possibilities for capturing and delivering all types of subject matter content to learners and teachers in distributed educational settings. This meant access to subject matter content and learning resources via networked information and communications technologies across a range of settings such as conventional classrooms, workplaces, homes, and various forms of community centers. Contemporary educational institutions, including conventional distance education providers, often pride themselves in being able to meet the learning needs of their students and staff at a time, place and pace that is most convenient to them.

4. Optimizing the influence of Media in Learning

Skillful integration of media and instructional method (i.e., learning and teaching strategies) is critical in the optimization of the influence of media in learning. This has to do with careful selection and matching of media attributes with learning and teaching strategies. Contemporary information and communications technologies afford a wide range and variety of opportunities to re-think and re-engineer the nature of our teaching and learning practices. A major part of this re-engineering process includes shifts in the roles of teachers from being providers and deliverers of subject matter content to becoming moderators and facilitators of learning within the context of a learner and learning-centered approach to education [4].

Learner and learning-centeredness is regarded as a desirable trait in education and training generally. Learner and learning-centered educational environments are those where the learner and the learning process is the focus of program design, development and delivery. In such educational settings, the learner — not the teacher, organization, or technology — is in charge of the learning experience.

5. Pedagogical designs for optimizing E-Learning

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 skillfully integrated into the educational experience. 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 [1].

This concept of "learning by doing" has been popularized, among others, by Roger Schank and his collaborators and it is at the heart of pedagogical designs that stand to optimize e-learning. These pedagogical designs include "scenario-based learning", "goal-based learning", "problem-based learning", "case-based learning", "learning by designing", and "role-play-based learning". 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.

6. 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. 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. 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 [8].

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 of learners 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.

The learning scenario, it is accompanying learning activities, and the assessment tasks serve as essential scaffolds for promoting and engendering meaningful learning activity. They also serve to contextualize learning and motivate learners who are turned off by too much focus on the mastery of the subject matter content and not enough on practical and generalizable skills. The assessment tasks and learning activities which the students are assigned are critical to the achievement of the intended learning outcomes. It is therefore essential that they are congruent with the intended learning outcomes for the subject. While they are embedded within the learning scenario they must be carefully designed and skillfully applied to direct students to the core subject matter content. By successfully completing these assessment tasks and learning activities, it is expected that learners will have accomplished the intended learning outcomes of the subject.

7. Related Pedagogical Designs

Other pedagogical designs that are also grounded in the concept of learning by doing include "problem-based and goal-based learning", "case-based learning", "role-play-based learning", and "learning by designing". They are different from scenario-based learning in the nature of the "precipitating event" or "trigger" in the situation [7].

7.1 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 as the context and anchor for all learning and teaching activities. 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 are expected to analyze it and decide what needs to be done next. A critical feature of problem-based learning is small group problem-solving and inquiry. Students 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.

While problem-solving is implicit in problem-based learning, learners are not told explicitly what is their role in the problem, or what they are supposed to do as they seek to analyze the presenting problem [3]. In goal-based learning, on the other hand, they are told very specifically what is 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 creativity.

Both, problem-based and goal-based learning designs have been widely used in the study of medical, education and environmental sciences.

7.2 Case-based Learning

In case-based learning, a case serves to provide the context and anchor for all learning and teaching activities. 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 are likely to encounter. Cases that stand to optimize learning and teaching opportunities are those that have the richness, complexity and variety that is embedded in real life situations and encounters. It is 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.

7.3 Learning by Designing

In learning by designing, the design task affords the essential anchor and scaffold for all learning and teaching activities. 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 [6].

7.4 Role-Play-based Learning

In role-play-based learning, the role-play provides the anchor and scaffold for all learning and teaching activities. 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.

8. Conclusion

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. Skillful 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. In such a way, these pedagogical designs may play very big role in teaching and learning via e-learning.

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V.KARAMCHAND GANDHI is working as an Assistant professor in the Department of Computer Science, Bharath College of Science and Management, Thanjavur, Tamil Nadu state. He holds his Master's degree in Computer Science from St.Joseph's College, Tiruchirppalli. He obtained his M.Phil and MBA degrees to the feather of his educational career. He had six years of experience in teaching and three years of experience in research. He is currently doing research in Wireless networks. He has presented and published more than fifteen research papers in National and International conferences and journals. His research interest includes Computer Networks, Image processing, Compiler design and Digital computer fundamentals. He is life member of various technical societies such as IAENG, IACSIT, etc.,

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