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Vibha Thakur

Career College, Barkatullah
University, Bhopal, India

ICT Enabled Teaching and Learning Activities Model

Vibha Thakur

Abstract

The integration of ICT in Higher Education supports various benefits to learners, educators and society as a whole. The collaboration and stakeholder engagement will be crucial to identifying emerging learning technologies and developing standards, technical guidelines and implementation policies. A successful integration of ICT in Higher Education System will occur only if implemented through well-designed standards, policies and strategies. In this paper I have proposed a model for 'ICT enabled teaching and learning activities' to learning-specific standardization activities.

Keywords: Higher Education, ICT Enabled, Interoperable, Tools & Technologies

Introduction

A great deal of research has proven the benefits to the quality of Higher Education (Al-Ansari, 2006, [1]). As Jhurreev (2005, [7]) states much has been said and reported about the impact of technology, especially computers, in Higher Education. Initially computers were used to teach computer programming but the improvement of the microprocessor in the early 1970s saw the introduction of affordable microcomputers into Colleges at a rapid rate. Hepp, Hinostroza, Laval and Rehbein (2004, [13]) claim in their paper "Technology in Colleges: Higher Education, ICT and the Knowledge Society" that ICTs have been utilized in Higher Education. Although at that time computers have not been fully integrated in the learning of traditional subject matter, the commonly accepted rhetoric that Higher Education systems would need to prepare citizens for lifelong learning in an information society boosted interest in ICTs (Pelgrum & Law, 2003, [14]).

The 1990s was the decade of computer communications and information access, particularly with the popularity and accessibility of internet-based services such as electronic mail and the World Wide Web (WWW). At the same time the CD-ROM became the standard for distributing packaged software (replacing the floppy disk). As a result educators became more focused on the use of the technology to improve student learning as a rationale for investment. Any discussion about the use of computer systems in Colleges is built upon an understanding of the link between Colleges, learning and computer technology. When the potential use of computers in Colleges was first mooted, the predominant conception was that students would be 'taught' by computers (Mevarech & Light, 1992, [10]). Collis (1989, [3]) refers to this as "a rather grim image" where "a small child sits alone with a computer". ICTs for Higher Education refers to the improvement of information and communications technology specifically for teaching/learning purposes, while the ICTs in Higher Education involves the adoption of general components of information and communication technologies in the teaching learning process.

ICT Enhancing Teaching and Learning Process

In a rapidly changing world, basic Higher Education is essential for an individual be able to access and apply information. Such ability must find include ICTs in the global village. Conventional teaching has emphasized content. For many years course have been written around textbooks (Oliver, 2000, [11]). The integration of information and communication technologies can help revitalize teachers and students. This can help to improve and develop the quality of Higher Education by providing curricular support in difficult subject areas. To achieve these objectives, teachers need to be involved in collaborative projects and

Correspondence:

Vibha Thakur

Career College, Barkatullah
University, Bhopal, India

improvement of intervention change strategies, which would include teaching partnerships with ICT as a tool. Harris (2002, [6]) conducted case studies in three primary and three secondary Colleges, which focused on innovative pedagogical practices involving ICT. As a consequence, the use of ICT will not only enhance learning environments but also prepare next generation for future lives and careers (Wheeler, 2001, [12]).

According to Cabero (2001, [2]), "the flexibilization time-space accounted for by the integration of ICT into teaching and learning processes contributes to increase the interaction and reception of information. The use of ICT in Higher Educational settings, by itself acts as a catalyst for change in this domain. Jonassen & Reeves, 1996, [8]), the influence of the technology on supporting how students learn will continue to increase. Contemporary learning theory is based on the notion that learning is an active process of constructing knowledge rather than acquiring knowledge and that instruction is the process by which this knowledge construction is supported rather than a process of knowledge transmission (Duffy & Cunningham, 1996, [5]). In this domain learning is viewed as the construction of meaning rather than as the memorization of facts (Lebow, 1993, [9]; Jonassen & Reeves, 1996, [8]). Teachers begin to acquire the important 21st century skills which they will need in their future lives.

ICT Enabled Teaching & Learning Activities Model

These are considered in terms of the ways in which they can be used to support E-Learning in terms of how they can be used to create pedagogically informed learning activities. Learning activities are defined according to a definition drawn up as part of the JISC/NSF Dialog Plus project and consist of seven elements, four of which are requisite and three are optional (Conole & Fill, 2005, [4]):

1. learning outcomes (required)
2. a set of attributes (required)
3. tasks (required)
4. roles (required)
5. tools (optional)
6. resources (optional)
7. outputs (optional)

The real meaning of a learning activity is that it must have one or more 'learning outcomes' associated with it. Learning outcomes are what the learners should be aware, or be able to do, after completing the LA; e.g. understand, demonstrate, design, produce, appraise. These tasks consist of mini-activities which need to be undertaken within the LA; such as reading paper, discussing, accessing database, extracting or manipulating data, answering questions, making decisions, etc. Those involved in the learning activities are assigned different 'roles' when undertaking these task, where roles are defined as the range of different functions that participants in the learning activities

undertake; e.g. individual learner, group participant, presenter. The tasks and associated roles undertaken to achieve the prescribed learning outcomes of the learning activities sit within the particular within which the learning activities occurs and this has associated with it therefore a set of contextual 'attributes, which might include a description of the subject domain, the level, the learning and teaching context, learning and teaching approaches adopted, the perceived skills which will be acquired, the nature of any assessment which will be undertaken, the time anticipated for completion of the activities, and any associated prerequisites.

In addition there are three optional elements to the definition of a learning activity; namely that it may have associated with it a set of resources, tools and outputs. Resources may be used in order to undertake the learning activities. Resources are essentially 'learning objects' such as web pages, databases, video streams or interactive maps. 'Tools' may also be used in carrying out the learning activities and are essentially facilitating applications which are used to undertake the prescribed tasks such as use of search engines, discussion boards, spreadsheets, or media players. 'Outputs' may result as a consequence of completing the tasks, for example students might contribute to a discussion board, offer answers to a series of posed questions, or produce an essay synthesizing the main concepts being addressed in the learning activities.

Here I have proposed a new model to explain the ICT enabled teaching and learning. This is represented diagrammatically in Figure 1 'ICT Enabled Teaching & Learning Activities Model' and each element is briefly described below. The various practices undertaken in ICT enabled teaching and learning activities model is as following:

1. Curriculum Design: The curriculum for each course and it should be redesign with the integration of ICT. This is the first step of ICT enabled teaching and learning activities.
2. Approaches: Now consider the different approaches for teaching and learning activities. Various approaches can be used to support ICT enabled E-Learning.
3. Tools: Various ICT tools and technologies can be used to support teaching and learning activities.
4. Resources: Here resources are referring to different information provider servers and other equipment which supports ICT enabled teaching and learning activities.
5. Assessment: The methods can be used to assess the students' activities like their learning capabilities.
6. Learning Outcomes: The performance of students and their results will be considered as learning outcomes.
7. Evaluation: The evaluation of students' performance can be based on various criteria.
8. Quality Assurance: This is the most important practice of this model. It is used to maintain the quality of whole model. It consists of some tests to check the quality of each practice of model.

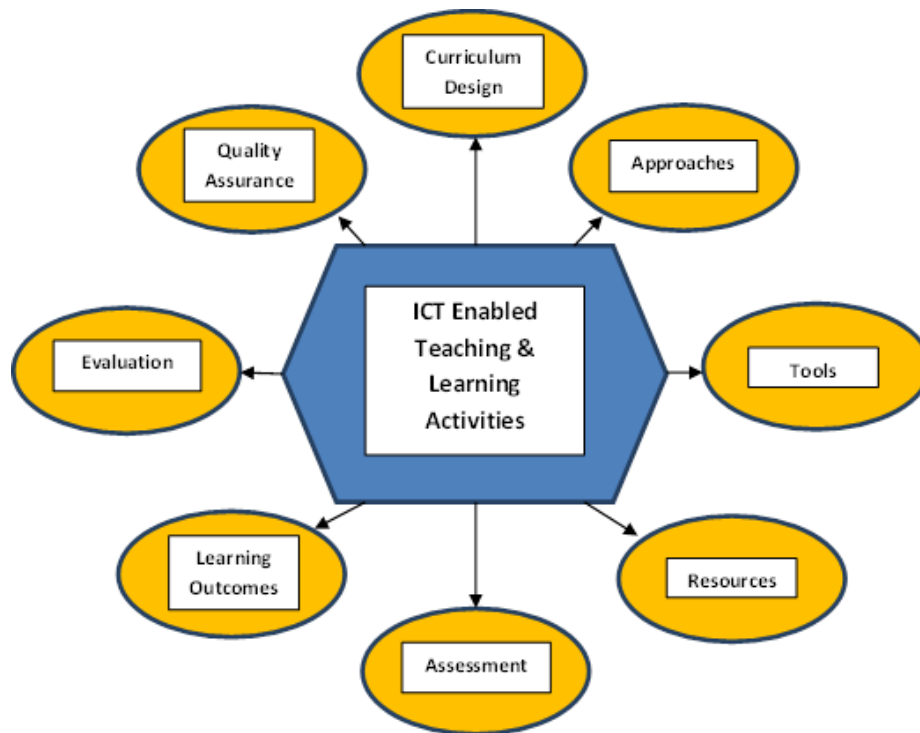


Fig. 1: ICT Enabled Teaching & Learning Activities Model

These can be mapped against the ICT enabled teaching and learning activities lifecycle as illustrated in Figure 1. A clearer understanding and articulation of the processes involved in each of the stages of the lifecycle will help in terms of thinking about how different tools can support each of these stages and the activities involved. A number of factors identified which influence how tools can be used to support effective practice. Making these factors explicit and identifying the strengths and weaknesses of different technologies and the ways they can be used should enable practitioners to make more informed choices of the ways in which different technologies can be used and help guide what tools and resources will be needed to support this. For example understanding the communicative aspects of asynchronous and synchronous tools and their potential for enabling reflection indicates that both have strengths in terms of supporting communication, but that the later may also have greater potential to nurture critical and reflective thinking.

There are five factors which are important in terms of influencing the effectiveness of tools and resources to support practitioners in adopting new approaches to learning and teaching are accessibility, Specificity and contextualization, Emphasis on learning and learning design, Authenticity and Adaptability and ownership.

A 'working classification' can be used for the attributes, roles, resources and tools elements of the learning activities. A 'perfect' classification for describing learning activities is not possible, in part because people's usage of terms will vary and in part because it will be context dependent. Nevertheless a 'just good enough' classification is useful. This classification maps closely with a classification developed by the generic and also with the current specification for Learning Design. A full description of the classification and a mapping against the classification and Learning Design is offered elsewhere (Conole & Fill, 2005, [4]) but a brief explanation is offered here. The classification consists of the following categories:

- The environment within which a learning activities occurs (online or via a computer, in a laboratory, in a lecture theatre or seminar room, in the work place or fieldtrip).
- The learning and teaching context (a discussion, small or large class size, a lecture, a practical session, a seminar or tutorial, a workshop, at a distance, etc.)
- The learning and teaching approaches adopted (problem-based, reflective, constructivist, collaborative, etc.)
- The anticipated skills gained (critical analysis, ICT, literacy or numeracy, communication, self-management, etc.)
- The forms of assessment employed (essay, MCQs, peer assessment, presentation, etc.)
- The roles adopted by participants in the learning activities (mentor, tutor, peer assessor, moderator, etc.)

Conclusion

The adoption and use of ICTs in Higher Education have a positive impact on teaching, learning, and research. ICT can affect the delivery of Higher Education and enable wider access to the same. In addition, it will increase flexibility so that learners can access the Higher Education regardless of time and geographical barriers. It can influence the way students are taught and how they learn. These possibilities can have an impact on student performance and achievement.

Higher Education and training help pave the way to a successful and productive future. ICTs are important, but are certainly not the only piece in the complex Higher Education puzzle seeking to achieve better, more efficient and more affordable Higher Education to an ever-growing number of people; especially those traditionally excluded from formal Higher Education, be it for economic, social, geographical or health-related reasons. The field of ICT in learning includes hardware, software, services and media – making it difficult to define its exact boundaries. We

consistently witness new launches of innovative products and services based on mobile and Web technologies, and these innovations encompass open and proprietary, not-for-profit and for-profit models, originating with people and organizations from both within and outside the Higher Education sector. Multimedia, collaboration, user-friendly interfaces and other features of social-networking websites are key components in these products. User-generated content takes an important place alongside “professional” or “traditional” Higher Educational resources. As in other domains that have witnessed or are witnessing the adoption of ICT, this can result in resistance and stigma. This should be met with openness, inclusion, and ICT-aware Higher Education policies and strategies. In this chapter I have proposed a model for ‘ICT enabled teaching and learning activities’ to learning-specific standardization activities.

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