

FUTURE CONCEPTS FOR UNIVERSITY TEACHING AND LEARNING

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ABSTRACT

University teaching and learning in the 21st century and beyond requires novel approaches to meet the imperatives of global challenges. With increasing numbers of university goers and a multitude of Information and Communication technologies, higher education institutions are embracing various technological innovations to enhance teaching and learning. This paper presents the state-of-the-art of university teaching, and provides new concepts for teaching and learning at university level. A novel technology enabled constructivist learning is proposed as a framework for future university teaching.

KEYWORDS

Mobile learning, active learning, collaborative learning

1. INTRODUCTION

Traditionally, teaching and learning is commonly characterized by knowledge transfer from a teacher (or instructor in some cases) to the learner. Formal learning, which is a form of structured and organised learning that is directed by someone else; generally involves learning in a relatively large group taught on a course of study. This type of learning implies limited teacher to learner interaction on an individual level and less collaboration among learners. Formal and conventional learning are teacher-centered transmission of knowledge based on lectures, books and printed lessons which are written in academic format that may not be suitable for each and every learner. Formal learning is still the primary form of learning in mainstream education.

Subsequently, during the last three decades educational technology has recorded a good level of development and penetration but mostly with a teacher at the centre of learning. Non-formal learning, based on new technology enabled pedagogical models, adds natural ways of learning to conventional and formal methods of learning. There is a great potential to improve learners' performance by using technology to make learning more individual, adaptive, natural, easily accessible and more efficient.

2. STATE-OF-THE-ART

Teaching at university level requires new tools and methods to address the needs of its varied population in such a way that all learners can achieve their best. Today's teaching methods such as lectures, seminars, group work classes and supervised work are mainly room based, with emphasis on one way teaching from a centralized location despite the classroom embedded technology, such as data networks and audio visual solutions.

The concept of "Computer Assisted Instruction" (CAI) also known as Computer assisted learning (CAL), has emerged as a supplement to formal teaching, an improvement to traditional teaching. Collins et al.(2008, p.49) claimed that computer technologies "can dramatically increase a student's access to information". They reported a significant increase of students' final exam grades as a result of CAI pedagogical effectiveness. In a separate study on CAL in medical education, (Devitt et al. 1999) suggested that provision must be made for the style of teaching of the course and the style of learning of students that are attending the course.

Early CAL systems could support on demand, self-paced and remote learning but there was no real time interaction and collaboration. Novel concepts of e-learning, mobile-learning, virtual classrooms and interactive classrooms would encourage and support student participation in knowledge construction.

E-learning, a computer assisted learning/training, comprises of many forms of electronic learning and teaching. It has become very popular in online and distance learning programmes mostly due to its time and location flexibility, cost-effectiveness, knowledge reuse and sharing among others. Even though e-learning has many advantages (Welsh et al. 2003; Zhang et al. 2004) such as self-paced and learner centred learning; the lack of interaction (immediate feedback) and collaboration especially in asynchronous learning remains a problem.

Given the portability and wide availability of mobile devices, universities are increasingly adopting “Mobile learning” (Corlett et al. 2005; Motiwalla 2007; Garaj 2010) in addition to formal teaching and learning. It is believed (Dias et al. 2008) that mobile learning will enhance learners’ engagement to create, access, revise and share course content thus enhancing learning motivation and ownership.

Furthermore, “virtual classrooms” are designed to enable real-time and on-demand multimedia content delivery as well as real-time engagement and feedback. Although it has been confirmed that synchronous learning improves real-time interaction (McBrien, 2009), there are reports of challenges (Stewart et al. 2010) in terms of student support, understanding curricular goals and technology limitations.

Another concept known as “Interactive classroom” offers interaction in a room based classroom. Several approaches have been proposed from classroom voting systems with multiple choice questions (MCQ), to classroom presenters and active learning classrooms. Interactive classrooms promote student centered active learning through real-time feedback provision, and content sharing among the learners and the teacher as well. Interactive classrooms can facilitate both summative and formative assessments, which not only stimulate discussion and enhance teacher/learners interaction but also provide performance statistics. The major weakness of this method is lack of learner-learner interaction which is very important especially in a constructivist perspective (Schunk, 2007). Another limitation of MCQ consists of “Close-ended questions”.

3. FUTURE TEACHING AND LEARNING CONCEPTS

Current education systems are generally teacher centered and lack sufficient collaboration. Future teaching should be foremost student centred. We propose that learning should be about exploration, self-motivation, collaboration, interaction and demand-driven.

Future teaching, through CAL systems, should foster learners’ engagement, responsibility and ownership of their learning. It is in this regard that more efforts should be invested into the following aspects of learning:

1. Peer-to-peer learning: learner-learner interaction in large classrooms and/or different geographical locations, peer-evaluation;
2. Learning availability and flexibility: self-paced on-demand learning and real time virtual learning;
3. Group based learning: real and virtual classroom
4. Teacher to learner(s) interaction: learning facilitation, feedback provision.

Current trends in computer assisted learning are to move beyond traditional formal and passive learning towards non-formal, active, interactive and virtual learning through multimedia and communications technologies.

A collaborative, interactive constructivist learning environment could not only help students learn more actively and effectively but also enhance learners’ leadership and responsibility in the learning process. Figure 1 presents a future university teaching framework based on new technology enabled constructivist learning concepts. This approach puts emphasis on the potential of mobile devices in peer-to-peer learning whereby collaboration tools are considered for learners to carry out project based assignments.

Learner’s ownership of learning is a key factor to achieve an effective student centred learning, a self-directed learning which leads to self-efficacy. Furthermore, assessment and progress control are important aspects of the learning process. Student self-assessment and/or self-evaluation enable learners to keep track of their learning progress and allow them to dedicate appropriate time and resources/efforts in order to timely achieve their goals. Hence, progress control tools should be an integral part of any efficacious constructivist learning system.

In addition to interactivity, collaboration and progress control; there are content format and delivery tools that contribute to overall learners' performance. Particularly, mobile learning is of special interest given its high potential to improve learners' performance through enabling classroom interaction and virtualization.

4. CONCLUSION

This paper has presented a critical review of teaching and learning at university level with a focus on future teaching. A future university teaching framework is proposed based on a constructivist theory which promotes active, interactive and collaborative learning. Learners' performance can be improved by applying an appropriate pedagogical theory together with the technological tools presented in this paper. Further work needs to be done to address the discussed technical and pedagogical issues as well as to investigate on the practicality, usability and effectiveness of the proposed approach to future teaching.

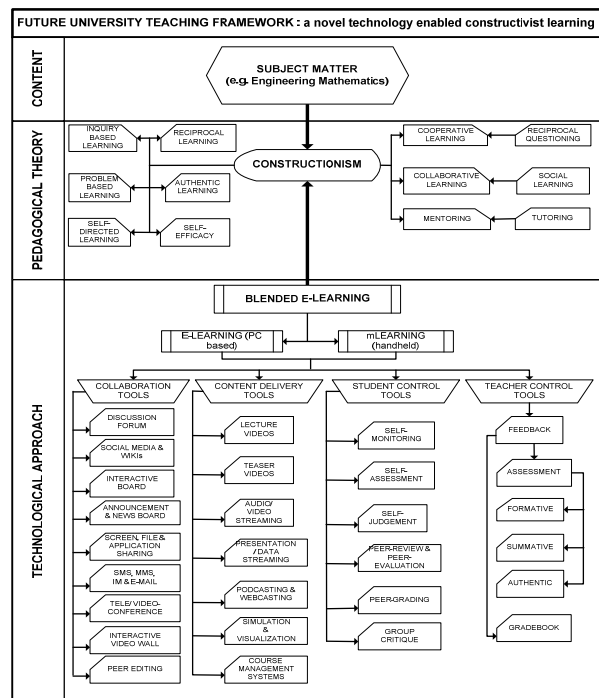


Figure 1. Future university teaching framework.

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