

Chapter 2

21st Century Education Technologies for Engineers and IT Professionals

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ABSTRACT

The word technology is inaccurately linked to hardware or tools only, and this misunderstanding has resulted in large sum of money invested in hardware or tools. In consequence, institutions and companies do not get the expected returns from these investments. One of the possible reasons for this could be the lack in understanding and knowledge of software and technology. This chapter attempts to describe the various education technologies in the forms of hardware or tools as well as software which include teaching and learning methods and how they are blended together to achieve effective communications. The technologies described in this chapter are blended learning, podcast, reciprocal peer tutoring, and personal learning environment. Finally, the chapter outlines some future research directions in the area of education technologies.

INTRODUCTION

The word technology is erroneously linked to hardware or tools only. This misunderstanding has resulted in large sum of money invested in hardware and yet institutions and companies do

not get the expected returns. One of the possible reasons is the lack in software and technological knowledge. For instance, a great disparity exists between information and communication technology driven productivity levels between small businesses and large corporations. One possible reason for this disparity is lack of technological knowledge and education and not because of the

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lack of funds or access to technology (Wielicki, 2005). This chapter attempts to put forward the various education technologies in the forms of hardware or tools and software which include teaching and learning methods among others blended learning, an education technology which is effectively carried out by engineers, IT professionals and lecturers in tertiary teaching. They blend online learning activities in the forum with offline activities carried out in the classrooms and beyond the four walls. Other technologies like podcast and reciprocal peer tutoring are used to support the learning activities in the online and offline modes. Students and practitioners can learn the technique of online forum discussion which is a very useful communication skill nowadays. Online forum discussion is the medium of communication in blended learning. Recent research in blended learning carried out by the author in Malaysia as well as in joint research in Pakistan will be discussed in comparison with other findings ranging from Abu Dhabi to Hong Kong which touch on peer collaboration.

In relation to blended learning, the author will discuss how podcast which is a series of video or audio files available on the Internet can be used to support learning. It is necessary to subscribe to Rich Site Summary (RSS) to keep in touch with the latest developments in podcast, online news, blogs, photos, and others needed in learning or work assignments of engineers and IT professionals.

This chapter will also discuss hardware like the eBeam and MIMIO pad in relation to teaching methods and presentation skills. Briefly, eBeam is a portable device which can easily convert any hard surface into a smart-board capable of recording, playing back, enlarging and even supporting the video and the Internet. The MIMIO pad is portable and light; everything written on it gets projected on the screen and the written work can be saved and played back.

The subsequent education technology software under discussion is the Reciprocal Peer Tutoring (RPT) developed by John Fantuzzo in 1984. In the

modern age, we can incorporate email, lecture-text in SMS format, and e-assessment with RPT. The strategy works well in a two-person or a small group of four persons setting. They provide mutual support through prompting, evaluating, monitoring, setting and conducting test on one another. Research on RPT conducted in the Philippines and the West will be discussed.

Having mentioned a few technologies thus far, probably we can ponder over the question, “Are we using technology to differentiate the different teaching strategies or are we differentiating technologies to suit the tasks at hand?” In the current learning environment, we encounter different interactions such as:

- Student with computer;
- Student with lecturer via computer;
- Student with student to the outside world.

Technologies to fit into the different interactions come from Web 2.0, Cloud Computing, Personal Learning Environment and Personalized Content through tagging objects.

Once the learning environment is intact, the introduction of education technology may fail if we do not receive support from the management and faculty. The management must fully understand the technology being introduced and must give full support to see it implemented successfully. It is not enough to provide financial support only and abstain from other obligations.

Faculty members usually fall in line if the management is serious in seeing the technology work. They will learn to implement and love the new technology if it can prove positive results. For instance, if students’ academic performance improved, teaching is made more interesting and exciting.

Based on the author’s personal experience, sometimes the classroom physical environment is not ready for the implementation of new technology. Changes are needed to the classroom

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