

# Developing technology competences among Egyptian college of education students

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**Abstract:** Colleges of education in Egypt are implementing initiatives to promote new and more effective teaching methods grounded in information technology and the improvement of teaching skills of undergraduate students in professional education programmes. The goals for participating faculty members are to integrate information technology competencies into not only the content of the courses that they teach, but also into their instructional methods of teaching. An initiative grounded in existing coursework, extant resources, and prior experience is described in this article. The effort provides a comprehensive, practical model for addressing the growing need for altering instructional methods to accommodate technology innovations for school personnel in meaningful ways.

**Key words:** competencies, information technology, standards, operational skills, professional use of technology

## 1. INTRODUCTION

The information age has created increasing needs for teachers and other school personnel at all levels of education to develop, use, and disseminate skills for including technology as the driving force behind preparing students for life in the 'real' world (Bailey, Ross and Griffin, 1996; Petrakis, 1996; Stanley, Linauer and Petrie, 1998). Technology has a significant foot in the door of Egyptian classrooms, and the schools will never again be the same (Funnell and Owen, 1992; Lowther, Lumley and Bailey, 1996; Mehlinger, 1996; Fisher, 1997; Bassoppo-Moyo and Morrison, 1998). Yet, most educators are provided with little training in how to use new technologies, so it is no surprise that many of them continue doing what they were doing

rather than spending time learning how to use the innovations that are being provided for them (Hunt, 1995; Bailey, Ross and Griffin, 1996; Furst-Bowe, 1996; Hill and Somers, 1996; Ley, 1997; Stanley, Linauer and Petrie, 1998). Too often, technology innovations go unnoticed, ignored, or seldom used in today's schools; and, the effects of failing to keep up continues to downgrade the Egyptian educational system. The exclusion of information technology from the processes of planning, managing, and implementing curriculum innovations means that change in education is moving at a snail's pace and serves to maintain stagnant, sometimes mediocre instruction as the rule in efforts to 'reform' the schools (Morton, 1996).

There is a growing and continuing need for systematic efforts to infuse instructional technology in relevant ways in all professional education programmes preparing administrators, teachers, and counsellors (Otter, 1992; Kitagaki, 1995; Hill and Somers, 1996; Northrup and Little, 1996;). The scope of skills, attitudes, and knowledge is changing rapidly, and there is far too much for anyone to retain more than a small part. Therefore there is little value in storing up large quantities in memory, as was the aim of traditional education. Instead, what the knowledge society requires is, according to Beriter (1997):

1. Just-in-time delivery of knowledge that is up-to-date and appropriate to the task at hand.
2. Skills in knowledge search and retrieval.
3. Thinking skills and creativity.
4. Life-long readiness to learn and unlearn.

Like most conventional wisdom, this has powerful commonsense appeal. So what is wrong with it? Almost everything. To wit, although knowledge is increasing rapidly, very little of it becomes obsolete. The principal determinant of learning is what the learner already knows about the subject. Successful knowledge search depends on extensive and well-organised knowledge of the domain being searched. Expertise, including creative expertise, depends on deep intuitive understanding of the principles, problems, and tools of a domain. It is doubtful whether there are learnable thinking skills that can be acquired independently of sustained work in a field. Little is known about how to foster a life-long readiness to learn or even what this would mean. Love of learning should not be confused with readiness to tackle problems at the edge of one's competence. The only new idea is just-in-time knowledge delivery. The rest have been part of conventional educational wisdom for half a century.

## **2. EDUCATING TEACHERS FOR A KNOWLEDGE SOCIETY**

Children may be growing up in a digital media culture, but this does not mean they are growing up in a knowledge culture. Some are by virtue of a family or community that puts them on familiar terms with knowledge work. For many young people, however, schooling provides the only accessible entry point into a knowledge society. For them, teachers are indispensable agents of enculturation. This raises the question of how teachers can be expected to initiate students into a culture that they have not grown up in themselves. Add to this the built-in bias of teaching toward viewing knowledge as a property of students' minds, and we have the makings of a classic 'you can't get there from here' situation. Pre-service teacher education seems to be our best hope for introducing the needed cultural change.

## **3. PROJECT DESIGN AND WORKPLAN**

The first step in successful implementation of any innovation is commitment on the part of student teachers, the subjects of the case study who are going to be trained to use information technology to enhance instruction during their teaching practice. For purposes of this effort, technology not only included computers but also computer networks and telecommunications, multimedia and hypermedia, camcorders and VCRs, instructional television and interactive video, CD-ROM and videodisc players, graphing calculators and video microscopes, telephone and voice mail technologies. The goals of the effort were:

1. To enhance basic and advanced information technology knowledge and productivity of students related to computer operating systems, word processing, spreadsheet programming, data base management, page layout and design, internet resources and use, presentation software, statistics and data processing, and instructional design courseware.
2. To develop instructional modules to help student teachers infuse information technology content into the teaching and learning processes that are the foundation of all professional education coursework.
3. To evaluate improvements in student teachers' competence and productivity that result from these efforts to enhance technology use in instruction. Responsibility for designing, implementing, and co-ordinating this response was assigned to a team of three people, myself (the researcher), a computer specialist, and one of the school teachers. Five overall goals were taken into consideration to:
  - a) clarify and refine technology,



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