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STRUCTURES AND TECHNIQUES USED IN A VIRTUAL DISTANCE LEARNING IMPLEMENTATION

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INTRODUCTION

Students usually choose their learning institute based on factors such as reputation and standard [1]. Presently, students partaking in e-learning¹ experiments display a certain amount of tolerance for ineffective learning systems. However, this tolerance will not endure, especially as e-learning technologies mature. The *quality* of e-learning systems will soon be the deciding factor in earning an e-learning institute its reputation and standard.

The construction of a virtual classroom involves more than just connecting static e-documents and hardware to the Internet - it requires the ability to make intelligent trade_offs that extend the scope of, and harvest the investment in e-learning systems. Strategies for implementation and maintenance of a quality learning system are essential since market demand and the mere feasibility of e-learning will not guarantee successful learning.

Lecturing in the Department of Computer Science and Information Systems at UNISA, one of the world's largest distance education universities, presents various advantages. Operating from a research-tutoring environment, we have both the research infrastructure as well as the subject background to implement practical strategies to gain advantage of e-learning.

In this paper we describe some of the challenges and pitfalls of virtual teaching methods and experiments on the hand of quality parameters that are essential in providing a quality learning system. We specifically elaborate on the flexibility and maintenance attributes of quality.

BACKGROUND

In our department, we have several certificate courses (which do not form part of formal degree curriculums) where we employ e-learning strategies.

Some courses were web-based, in the sense that no paper was exchanged between facilitators and students in the duration of the course, (with the exception of written examinations). Other courses are only partially web-based. For example, in the Internet & Web-Design course, students initially use static, paper-based distance learning methods until they have mastered material such as "What is an ISP (Internet service provider)?", "How do I connect?" etc.

In the next few paragraphs we describe some of our e-classroom strategies which include virtual administration, study material, assignments, feedback and assessment. We also highlight the problems that we experienced and on the hand

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of our quality parameters and suggest ways to avoid or reduce these problems which can seriously affect the quality of the e-learning system.

Virtual administration :

Several strategies can be employed to provide students with web course access. A simple database with interactive scripting communicating with a web page is one solution. Another is to use a commercial product like WebCT or CSBW for access and administration [2]. Where efforts are innovative and institutions do not yet have e-support policies in place, administrative burdens of these systems end up upon the shoulders of the facilitators. Performance problems or problems with delayed responses are often perceived as lack of course quality by the students.

Flexibility and maintenance of course administration systems have to play a major role in the selection of an e-support system. Especially in innovative efforts, quality may be assured by keeping the system as simple as possible. For example, one password for all may not provide a high-tech solution, but will most certainly reduce the frustrations that one or two facilitators deal with when maintaining databases and looking up forgotten passwords.

Study Material :

Developing high standard, quality courses is expensive [4]. Converting ideas, notes, and paper work into an acceptable format for e-learning intensifies the involved labor exponentially. Spending many man-hours to design high-tech courseware may be valuable where content remains fairly static, for example 1st year Algebra, or History. However, where content often changed by the chronological instability of technology or the environment (eg. Computer Science or Law), these hours may be futile.

Although many facilitators have neither the skill, time nor desire to program in raw HTML source code, it might be a less expensive option for courseware [3]. But, HTML-based courseware also have several disadvantages. Monitor limitations and different web-browsers mean that users may see the courseware differently from what the developer intended, which may affect the perceived quality. To ensure WYSIWYG² courseware maybe in using PDF³ files, which are very flexible and can accommodate high-tech multi-media technologies. However, in a synchronous or on-line e-learning environment, these may be inflexible.

Communication

Most of the communication with students were done using e-mails and discussion forums (after registration). Phone calls were limited and mostly initiated by electronic problems e.g. faulty e-mail addresses or late registrations. Electronic mail was answered on a daily basis and the quick responses were positively received by students in contrast with phone calls which sometimes created the illusion of the unreachable lecturer when schedules turned hectic.

Communication via electronic channels most definitely enhanced the perceived

quality experience of course assistance in distance education..

Assignments, Assessment & Feedback :

Different ways of submitting assignments depend on factors such as the course itself, the support system being used (for example WebCT) and the teaching strategy.

One method that was tried in a very early effort was to accept e-mail submissions. Large file size problems, faulty zipped files and our own reluctance to send automatic replies upon reception, meant a lot of unnecessary administrative burdens. Many submission problems can be overcome by using simple HTML forms or a support system e.g. WebCT.

For typed assignments, different word processors (or different versions) present another problem. Insistence on text files designed with say NotePad, kills enthusiasm. Insistence on PDF submissions eliminates many problems - provided the enabling infrastructure is established beforehand.

Irritating student habits like disregarding file naming specification or neglecting to correctly identify him/herself, may be alleviated by clever maneuvers just to find that students have found another way of adding to administrative burdens. The trick is to find a balance between unavoidable administration and creating an unnecessary workload in order to avoid unintelligent actions.

Students are usually satisfied with the short(er) turn_around time of e-marking. However, the experience of many the facilitators are that e-marking is a very exhaustive process. Somehow the reading and e-administration take much longer [5]. A simple, workable system producing satisfying results is essential to ensure both high quality learning systems and contented facilitators.

Although virtual examinations are feasible and implemented world-wide at special examination centers, the investment for a large distance-based university to establish the infrastructure and also overcome the administrative problem of student authentication must still be investigated.

4. FUTURE RESEARCH & CONCLUSION

Various research projects are currently underway. We are designing theoretical models and strategies for e-learning based on principles used in software and information engineering, as well as project management. We include strategies which we have found to work from experience and implement these on new groups. We try not to use working systems in order to keep our administrative burdens to a minimum.

There are both excellent fruits to be harboured and fundamental impediments in e-learning. It is imperative that we have a clear and accurate understanding of the web's limitations and capabilities. Creative approaches and competent strategies to manage these limitations at both the instructional design and user levels need to be established and understood in order to ensure a degree of quality comparable to

traditional instruction. Otherwise, the long_term success of e-learning systems could be put at risk by an excess of indifferent and unsatisfactory implementations.

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