WHY ARE STUDENTS' PERCEPTION OF WEB-BASED-EDUCATION DIFFERENT?

Azza A. Arif
School of Architecture and Planning,
University of the Witwatersrand, Wits 2050,
Johannesburg, South Africa
E-mail: *azza.arif@attglobal.net*

Abstract

While Web-Based-Education is widely and, in many cases, effectively used around the world's educational institutions, it is still at its early stages of implementation in South Africa. Its use is very recent and the development of students as well as staff skills to comfortably use web-based courses in their learning and teaching is relatively slow. This study compares two initiatives that took place over two consecutive years in the Faculty of Engineering and Built Environment. It examines the reflections of students on their use of a web-based module in a core course. The students come from two different disciplines and, despite the use of the same content and the same structure of the software, students had mixed reactions toward the new method of delivery. Many of the differences in students' perceptions are contributed to the different set-up of the introduction in each case. The success or failure of such initiatives is viewed to be dependent - aside from the obvious academic integration and clear objectives - on many logistic and non-academic factors as well.

Introduction

The use of computer technologies at all levels of education (primary, secondary and tertiary) is no longer a wishful idea but rather a fundamental element that is already in universal application. Web-Based-Education (WBE), as a teaching and learning tool, is gaining popularity with the fast development of communication networks worldwide. The increasing capacity to access information, at anytime and from anywhere, is revolutionary in its own merit[3] but more so when added to an educational context. However, the extent of using the technology in educational institutions in South Africa is different from other parts of the world.

Despite its complex political, social and economic characteristics, South Africa nevertheless carries a major load when it comes to development of the region and the continent. In comparison to its counterparts that constitute Sub-Saharan Africa, South Africa's emerging economy accounts for 44% of the total GDP. South African illiteracy rates are around 14 to 16% and between 30 and 46% in Sub-Saharan Africa, using year 2000 data[6]. As far as technology and infrastructure, the country's population has 62 personal computers per 1,000 people while Sub-Saharan countries have 9 personal computers per 1,000 people. (see Figure 1). Internet Users are 2.4 million of the 42.8 million people in South Africa; in Sub-Saharan Africa the ratio is 3.7 million in 658.9 million people. In the USA, however, there are 585 computers for 1,000 people while Internet Users number 95.4 million of the 281.6 million people[6].

Figure 1: South Africa and the Region
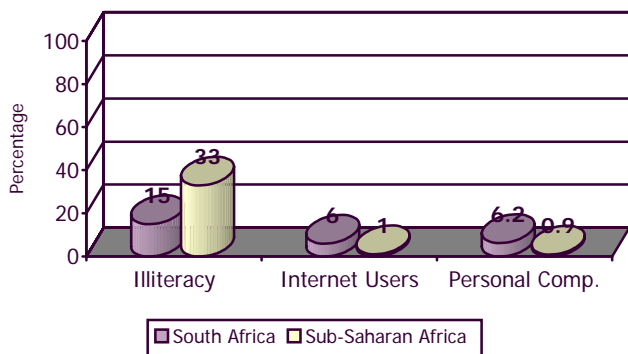
Using Web-Based-Education

Against this brief background, expectations for the use of evolving technologies within the local education system, like WBE, should exist. However, the reality suggests this is not the case. The Department of Education has acknowledged in its new academic policy the impact of the "knowledge society" on Higher Education: "Higher Education has a particularly important role in providing the society with individuals trained in such a way that they can respond to the demands of knowledge-based occupations"[2]. There are serious efforts being made towards the use of technology in favour of good teaching and learning. But, as the country's resources are distributed to a much wider base of users than ever before, this area is not among the highest priorities for expenditure. Nevertheless, there are many opportunities to maximise that use and WBE could easily be part of the reaching-out programmes where education needs to reach the disadvantaged population - especially those who live in the more remote areas.

On the other hand, the wide use of WBE could also have a negative effect. One of the results of the previous regime in higher education is the wide gap that exists between the advantaged and the disadvantaged population, especially on their entry to their first year of studies. Many students find it extremely difficult to relate to computers - sophisticated machines that they might have never seen before. That in addition

to dealing with the new variables in a university setting could be extremely difficult for the freshman. Adapting to the university environment should not be complicated by the introduction of hi-tech methods for delivery of content[1].

In practice, using the Internet for education has only taken a formal shape a few years ago at the University of Cape Town (UCT). Many teachers and even more learners are reluctant to use computers in general - teaching and learning in particular. Only recently, the first handful of courses started utilising the web in their curricula with careful approaches - from the administrative and technical as well as the academic side.

This paper discusses two of these initial attempts. It first presents the introduction set-up for both groups and then proceeds with the comparison between the two initiatives in four key aspects concluding with the students' own comments and evaluations.

Introducing the First Initiative in "Construction Economics and Management"

The first initiative in using WBE at UCT took place for the students of Construction Economics and Management in their second year of studies. The idea was to test the use of the newly purchased software - WebCT (Web Course Tools) - in one of the main courses of study[1]. Many factors facilitated the adoption of the initiative:

- Students have already been at university for one year and are accustomed - to some extent - to the learning environment, the facilities, the computer system and network set-up.
- The university offered highly professional technical support to encourage staff and students to use computer-based technologies across faculties.

- The new software, WebCT, is user-friendly and easily adaptable and customised to suit different educational outcomes.

Undoubtedly, it was useful to attend an introductory short course on Web Publishing to be able, as a lecturer, to meet the students' expectations of this new delivery method. It entails numerous demands on the design level as well as the layout level and involves visual attraction as well as the content linkages. Theoretically, the students would be looking at the information provided on the web-site and interact with it in different ways; however, their liking or disliking of any of those elements could affect the students' perception of the method and could influence their enthusiasm. Skills to develop a good interactive site could be easily acquired provided a dedicated 'team' existed for such a mission but that is not the case here. In this attempt, efforts were made to put together one module of the four that constitute the course; the time required was the limiting factor. It was also a conscious choice to use only one component in order to test the application and examine the effect versus the traditional delivery methods used in the other three components[1]. The intentions were to find out how receptive the students would be to using the web in learning and if they are ready for wider use across their coursework. The students' evaluation of that module was encouraging, as will be discussed.

Introducing the Second Initiative In "Architecture"

In the following year, a similar approach was repeated for students who are also in their second year of studies but in the Architectural Studies programme. This group is generally more conversant with computers. Many were not only familiar with the basic word processing and web browsing packages, but they had expertise in some graphics applications. In addition, they get more exposure to computer-aided-design packages (CAD) in their second year of studies. Therefore, their skills are better than their construction counterparts. Although a few of them still struggled with the basics of the Internet, there were a number of students who were very familiar with the university computer system and were actually tutoring their colleagues.

In the second implementation, a slight change had to be made to the set-up. There were about 50 students in second year architecture in comparison to the 35 students in the construction course. The computer-teaching laboratory could only host 25 students at a time, so time spent by architecture students in practice was less. In addition, the introduction made to the architecture students regarding the software use, the web-site access, and the available activities was, of necessity, brief. Construction students were given more than one session to be introduced to elements, step-by-step, and checking the different menu items. They were allowed to try almost every link and were shown how to follow certain paths for specific topics. Due to their familiarity with the web, the architecture students were mostly left alone to explore the site and its different facilities. They were encouraged to log-in from home or campus, as accessibility was available 24 hours a day, uninterrupted. Accompanying lectures in both cases covered the topics briefly, and students were directed to use the site for information and for self-tests that would help their studying.

Taking the experiment further, the architecture students wrote a Test at the end of the module using the same web-based software and their results were published on-line immediately (with some hiccups). That test was an attempt to examine the students' readiness for more integrated use of the technology in both their studying and in their assessment.

Although the two attempts were almost identical (the content, the time frame and the intended outcomes were the same) it was observed that perceptions of students differed as did their interest in using the web and their enthusiasm for the idea.

Similarities and Differences

These two initiatives have several issues in common. The module was part of the Construction Technology course for the construction students and was part of the Building Construction course for the architecture students - different titles for similar subjects. Few improvements in the graphics content and text were done in the second initiative, keeping the structure similar in both cases. The Quiz/Self-Test option was used for both groups of students. They were able to interact with questions on-line where the correct answers were provided at the end of each Quiz. A communication tool between the class and the lecturer was available (e-mail) and an on-line 'notice board' was actively used. Questions used in the evaluation forms were almost identical for the two groups. To improve on the first questions set, changes were made to the verbatim of the second set but the essence of the queried information remained the same. Excerpts of that evaluation are presented in the final sub-section of this paper.

The comparison here is focused on four issues dealing with the students' familiarity in using the web, their perception of the content and of the assessment tools available on-line, and whether they are prepared to use WBE in other coursework. Figure 2 offers a comparison summary.

Familiarity with using the Web

Both groups - Construction and Architecture students - indicated their familiarity with using the web in general before entry to university or familiarity with its use for studying and research purposes (above 80% in each group). But their exposure to its use in a formal course was limited. Around 81% of the architecture students responded negatively to a query about previously taking any web-based course or module. As mentioned earlier, the use of WBE is new in the system and very few staff members are prepared to invest time and effort in adopting new teaching methodologies while traditional methods are acceptable in instruction. Any student's familiarity with the Internet is probably attributed to entertainment and leisure usage rather than to academic study but any kind of familiarity could actually be regarded as an advantage or effective prior knowledge.

Familiarity with the World-Wide-Web features, links, navigation and functions should lead to an equal ease with using it for learning and for self-evaluation. However, that was not the case as is evident from the students' comments.

Perception of the on-line Course Material

Many research findings support the inevitable difficulty that 'traditional' readers find in electronic writings[5]. It was expected that many students would find following the course content on-line problematic given the relatively high 20% of the class with no skills using the Web. However, in response to a question about the design of the material and its layout on the screen, 69% of the construction group were positive and the majority of the architecture group (87%) found no difficulty in "reading and following the course content on-line." The variance in the two percentages could be related to the visual training the architectural students get as part of their coursework - a factor that could attribute easiness in viewing and using different media. The training of students in a certain field of study could influence their learning using the technology and that is one of the variables in WBE affecting its application.

Perception of the on-line Assessment Tools

In the design of the module, preference was given to the 'Quiz' option rather than other available assessment tools. Here students were free to choose any set of questions listed by topic to test their knowledge at any time. The instant marking of these self-tests is a major advantage over the usually lengthier process of manual marking, making it an advantage for

both the student and the lecturer. In their evaluation of such an option, 84% of the construction group positively indicated that they used that tool to "complement" their studying. On the other hand, only 59% of the architecture students indicated that using the 'Quiz' option was "helpful" to their studying. The variance could be contributed to the preparation the students lacked in familiarity with such tools. This is an element of training: training the learner to learn using a different mode. There is evidence from research pointing to the value of the preparation of students to on-line coursework. As an effective way to build the learner's confidence in using the technology[4].

Preparedness to using WBE in other courses

The last focus of this analysis is on the future of WBE in the coursework. Clearly, students had mixed feelings about repeating the experience of using WBE and the extent of its use in other courses and/or modules. In the construction initiative, asked if they think this method "should be applied to other modules in the same course and/or other courses," 84% of the students responded positively. On the other hand, only 64% of the architecture students, when asked if they would be "prepared to take a Web-Based full course," responded positively. This could be a reflection in the preparatory

steps, or lack, before leaving the students to explore the content on their own. While construction students were privileged with a slower pace and sessions for guiding, the architecture students had to struggle with self-learning and work around the technology's hindrances using their intuition.

This finding serves as a contradiction to the expected. While the architecture students who are more adaptive (possessing higher computer skills and largely familiar with the web were expected to need less in terms of orientation and introduction to the web-based module) they appeared to be less enthusiastic and less prepared to try similar approaches.

General Comments

For more understanding, an open-ended question was provided at the end of the evaluation form. It allowed for many critical issues to surface that otherwise would have been complicated to assess using the direct questions format (with one option of four responses available: Yes, No, Sort of or Other). It was a common question in both evaluation forms for the two groups: "What changes do you think should be made to this experiment / module in order to improve on it? Please write any other comments that you would like to make."

Figure 2: A Summary of four elements of comparison to the use of WBE
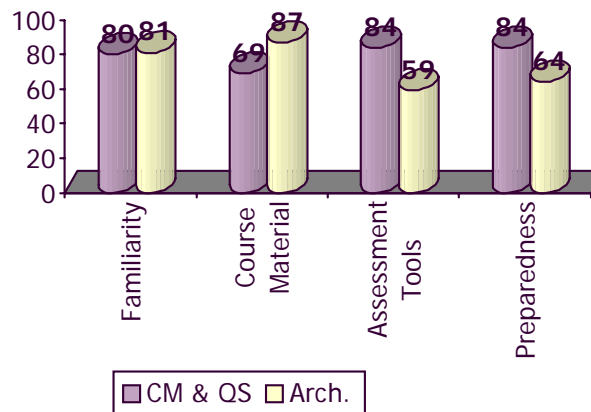
The responses to that question put forward the students' insight into issues of:

- depth of the content and the extent of its coverage on-line
- need for more details in the subject to match a 'textbook'
- confusion with the hyper-linked material in a non-longitudinal format
- reality of the lecturer's role as a facilitator rather than a knowledge giver
- another related reality in the usefulness, or rather their uselessness, of traditional lectures
- 'traditional' versus 'technological' methods of information delivery - complement or replace.

All of these issues necessitate separate research but are briefly addressed, with some of the actual comments reading as follows:

"Design of software should be made easy to read and follow up, e.g. in an essay type format."
"Should be in more detail as in a textbook…"
"I feel that notes would be better than web pages…"
"More on-line notes..."
"More in-depth content and self study, not always having everything 'spoon-fed' in lectures which can become boring."
"A good module, also round, I am very satisfied and impressed."
"It should be introduced in 1st year."
"Just OK, don't think it should replace traditional methods, rather complement."

These comments are not group-specific. The different views expressed and the criticism directed to the method were shared by both classes.

Conclusion

In an attempt to evaluate technological applications in education and their integration into university curricula, an initiative in the area of web-based-education was tried in a South African institution. It involved two groups of second-year students, offered the same web-based module. The comparative analysis between the two reveals some differences in the perception of WBE by the students.

It appears that forcing the students to practice in the computer laboratory (in the form of scheduled sessions) produces a more comfortable learner with the technology. Many of the frustrations appear to be caused by difficulties in logging-in and in finding the appropriate piece of information easily, in a straight-forward way. Lack of preparation among some students reflected in their evaluation. Although some students prefer not to be "spoon-fed", there is a wider majority that still needs guidance and direction using the Web, with formal sessions allocated only for such purposes. Not only do they need help in following a topic through a non-linear set-up of information, but some students also need assistance and encouragement to interact with the computer in self-tests. The instant response they receive from the computer could sometimes be overwhelming.

The general perception of the experiment in both programmes was not negative, as more than half the students indicated their preparedness to use WBE in other modules and/or courses. The introduction of new methods to second year students was successful in that it helped take the first-year anxiety out of the formula. Using the technology could prove ideal when utilised to address slight variance in similar courses and subsequently the variance in the students skills. As exposure to technology is still at its infancy in many parts of South Africa, there is more reason to move with slow pace using hi-tech in education.

Acknowledgments

References

1. Arif, A. 2001. Learning from the Web: Are Students Ready or Not? *Journal of International Forum of Educational Technology and Society,* October.

2. DoE 2002. "A New Academic Policy for Programmes and Qualifications in Higher Education," Department of Education, Retrieved September 16th 2002.
   URL: http://education.pwv.gov.za/DoE_Sites/Higher_Education/Academic_Policy

3. Honey, P. 2001. E-Learning: a performance appraisal and some suggestions for improvement. *The Learning Organisation,* Volume 8, Number 5: 200-203.

4. Lynch, M. 2001. Effective Student Preparation for Online Learning, *The Technology Source,* November / December 2001, Retrieved September 16th 2002.
   URL: http://ts.mivu.org/default.asp?show=article&id=901

5. Selfe, C. and Hilligoss, S. (eds.) 1994. *Literacy and Computers: The Complications of Teaching and Learning with Technology.* New York: The Modern Language Association of America.

6. World Bank 2002. "Country Data Profile," The World Bank Group, Retrieved July 24th 2002. URL: http://www.worldbank.org/data

Biographical Information

Azza Arif is an architect, lecturer and student. She earned her B.Sc. in Architectural Engineering from Egypt and her M. Arch. from the U.S.A. After 10 years in professional practice, she entered academia. In addition to her teaching, she is currently a student working on her Ph.D. on Web-Based-Technology in Architectural Education. Besides the areas of building design and construction, her research interests include the applications of technology in Higher Education and the use of IT in coursework. After moving to South Africa, she became an actively involved academic, with several publications in the areas of academic development, educational technologies, architecture and construction. She has participated in a number of local and international conferences on these topics and has been invited as a reviewer for conferences and publications. More details are found at: http://www.wits.ac.za/archplphd/ Azza.htm.