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Novice web teachers teaching novice web learners

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Contents

1. Introduction

Information technology and computers have forever changed the way that humans in modern society live, work and learn. Computer tools like word processors, spreadsheets, databases and WWW browsers are in widespread use both in the work place as well as at home.

It was inevitable that information technology would find its way into the halls of higher education, and it has become evident that information technology and computers will play increasingly important roles in instruction. One application of computers and communications technologies in education is online education.

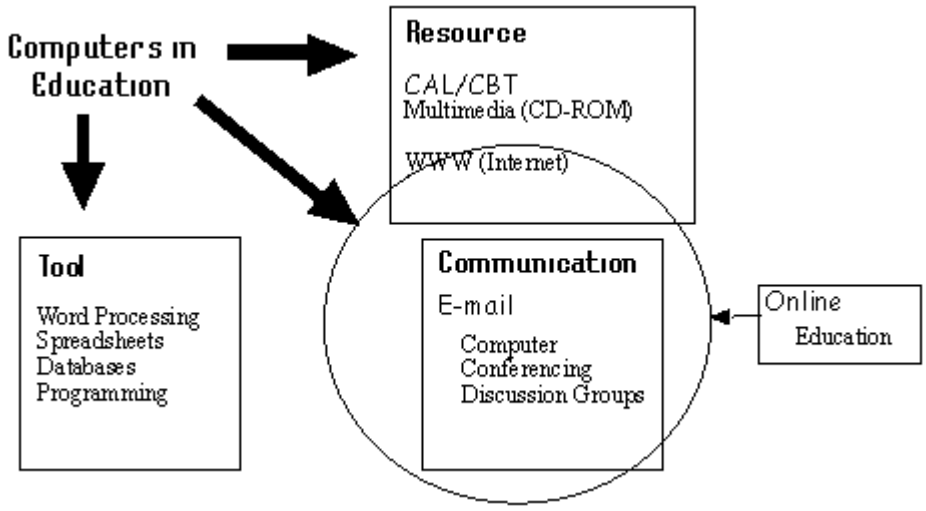
The question arises whether online education can be practised in certain South African contexts in which learners have had no or little exposure to computer technology (therefore limited computer skills) and in which they have limited access to the Internet.

This paper is used to report on the implementation of an online course. The students participating in this course had limited computer skills and limited access to the Internet. The question arose whether online education could be successfully used to teach students of this profile.

2. Online Education

The computer has been in use in education for many years. Online education is one of the newer applications of computers in education. Figure 1 illustrates the use of computers in education:

Figure 1 Computers in education: online education
(Adapted from Maier, Barnett, Warren & Brunner, 1998:71)



Online education is any form of education (teaching/learning) that takes place via computer networks which could be local or global (Kearsley, 1997: [online]). The WWW is experiencing unprecedented growth and, in line with its growth, its use as a means of instruction (Warendorf & Verhoeven 1998:1452)

McCormack and Jones (1998:1) state that computers and communications technologies in education have a history going back 30 years. In that time it has been known as computer-mediated communication (CMC), computer conferencing, online learning, Internet-based learning, web-based education (WBE), web-based instruction (WBI), web-based teaching (WBT) and telematics. Whereas CMC and telematic education include technologies like interactive television, computer telephone integration (CTI) and CD-ROM based multimedia (compare Walters, 1995:14 and Kearsley [online], 1997), WBE, WBI and WBT, specifically refer to the use of the WWW for teaching and learning .

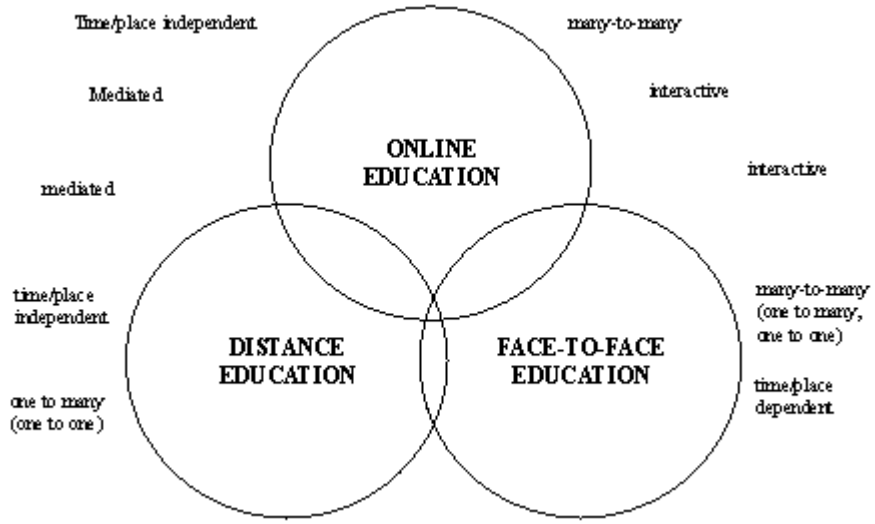
Romiszowski (1997:33) describes CMC as any form of organised interaction between people, utilising computers or computer networks as the medium of communication. Paulsen (1995:[online]) defines CMC as the 'transmission and reception of messages using computers as input, storage, output and routing devices. CMC includes information retrieval, electronic mail, bulletin boards, and computer conferencing'. The focus is however clearly on communication, and not necessarily education, therefore CMC cannot be equated with online educational systems.

Online education in this paper will refer to the delivery of instruction primarily via the World Wide Web (WWW), supplemented by Internet services like e-mail. It will be considered as being synonymous to Web-Based Instruction (WBI) or Web-Based Teaching (WBT).

Harasim (1989:50) claims that online education is a new domain, and not really a variant of distance education or an extension of classroom activities, as it has often been approached before. Online education shares attributes with both face-to-face education as well as

distance learning which can be represented as in figure 2 below:

FIGURE 2: Online education as a new domain (Harasim, 1989:51)



Teaching environments that are created using the WWW are most often referred to as virtual classrooms.

The implementation of an online course is a complicated process in which pedagogy for conventional education and distance education must merge, and, in addition, new pedagogy for online education must be created. Furthermore, the unique characteristics of learners in an online education environment in terms of learning style, literacy levels and motivational factors, will all impact on the successful implementation of online educational programmes.

Top

3. Objective

The objective of this study was to record and report on the experiences of students who participated in an online education programme for the first time in order to determine whether online education could be used to teach the subject field ‘Information Technology in Education’. Although no claims are made about the generalisability of the findings, the student experiences in this case will be used to confirm or disaffirm relevant literature on online education that provided the guiding principles for the design and development of the virtual classroom.

Top

4. Participants

The participants in the course were postgraduate, adult learners studying a B.ED. (Microcomputers in Education) at the Rand Afrikaans University (RAU). No survey was undertaken to determine racial, gender, culture or other distinguishing traits, but the students in the class were considered to be representative of the B.ED. student population at the RAU.

Many students had less than one year's exposure to computers. A very small percentage of the students (less than 10%) had direct access to the Internet from their homes. The

remainder relied on Internet Cafes or they travelled to the university to make use of the computer laboratory there. None of them had experience with the Internet prior to the course.

As a lecturer, my profile prior to the course was as follows:

- I have used the Internet and the WWW extensively
- I had no experience with web development
- I have participated in a Canadian-based online course.

Top

5. Development approaches

Several development approaches were considered:

- HTML
- HTML WYSIWIG editors
- Word processor conversions
- CAT's (Courseware Authoring Tools)
  - Web Course in a Box
  - Topclass
  - WebCT
  - Blackboard

Owing to my own expertise levels, it was decided to make use of CAT software. Web Course in a Box was eventually selected. WCB (version 2) is free to educational institutions. I was not prepared to spend a significant amount of money on a first attempt, especially because I was not sure if online education could be used effectively in the specific context.

Top

6. Issues of Pedagogy

Several dimensions of online education were identified in preparation of implementation by means of a literature study. These dimensions were clustered as follows:

- pedagogical foundations,
- instructional design, and
- interaction and communication.

It is impossible to elaborate on each of the dimensions and groupings here. Instead, a typology for online education is generated and is presented in table 1.

Table 1 A typology for online education

Pedagogy	

Online education makes use of constructivist approaches	• Learners
	  ○ Are producers and constructors of knowledge
	  ○ Learn in authentic situations
	  ○ Work in teams (collaborative learning)

		• Lecturers are facilitators of knowledge construction
Online education motivates learners		• Curiosity • Challenge • Variation • Relevance
Online education provides didactic support		• Coaching, modelling & scaffolding • Guided didactic conversation • Adequate feedback • Metacognitive support
Online education makes use of online assessment		• Individual assignments • Group assignments • Objective assessments • Portfolios
Online education is supported by learning theory		• Internal processes of learning • Reduction of cognitive load • Learner Ccntrol & flexible learning • Selection of time/place • Selection of content resources • Selection of communication strategies
Instructional design		
Content design		• Chunking • Hypermedia & multimedia • Readability & consistency • Demarcation of themes
Information organisation		• Linear/sequential • Hierarchical • Referential
Navigation and orientation		• Location • Travel • Placement cues • Hierarchies & indices • Semantic nets
Interaction and communication		
One-to-one One-to-many Many-to-one	Synchronous events	• Web-based chat • MUDs & MOOs • Shared whiteboards • Synchronous text/sound/video Conferencing
	Asynchronous events	• E-mail • Web pages • Forums • LISTSERVs

Top

7. Virtual classroom

7.1 The virtual classroom consisted of:

Course home page

The virtual classroom was accessed through the course homepage. The course homepage comprised six links that gave access to the different components or elements of the virtual classroom.

It was a relatively easy process to create the homepage. The design features of the software presents the designer with templates from which options can be made in terms of colour, graphic set, format and the like. In addition, we used Microsoft FrontPage to edit the course homepage further. We added a scrolling marquee at the top identifying the course by name and we discarded the name, year, etc. that were generated by the software. We also added a background that we found aesthetically pleasing as well as a prompt that reminded students to read the announcements that were posted.

7.2 Announcements

We regularly made announcements on these pages regarding assignment due dates, test dates, progress, outstanding assignments, etc. Again this page was manually edited with the WYSIWYG editor for improved aesthetics. Initially announcements were listed numerically from top to bottom. As the amount of announcements increased, we created a table of contents for the announcements, that linked by means of bookmarks to the appropriate announcement. We also changed the order of the announcements around so that the latest announcement appeared at the top of the list.

7.3 Course programme

These pages were used to represent the course programme. It was a static document in table form that was used by students as a calendar of events and due dates for the course.

7.4 Class information

This page contained an electronic version of the paper-based study guide that the students received. Again the pages were manually edited with Microsoft FrontPage™. The editing involved using more readable fonts, changing text and background colours, changing the size of fonts for headings and the like. In addition we provided a list of contents that made it easy to access the relevant sections in the document.

7.5 Students

This page contained a list of the students registered in the course together with their email addresses. Student names were in fact links to their own personal home pages (home pages could be created from the Utilities page).

Another link on this page allowed students to send e-mail to all of the members of the class. However, we removed this functionality. The link merely launched the default e-mail client on the particular workstation and inserted the e-mail addresses of all of the students in the class in the TO: field. The computers in the computer centre where many students accessed the virtual classroom did not have a default e-mail client set up as students at the university use a web-based e-mail client. This function therefore did not work from computers at the

university. We replaced this functionality with a link to the web-based e-mail client of the university.

7.6 Learning Links

'Learning Links' was the heart of the virtual classroom as this was where all the teaching and learning took place. The page contained links to individual lessons as well as two discussion forums.

A lesson could contain text, web links or discussion forums. The discussion forums in lessons were used to facilitate communication about certain topics or for collaborative assignments. Students were also required to attach word processing documents to postings in forums that were set up for specific assignments.

The Learning Links page further contained two discussion forums. One was titled 'Say Hello' and was intended as a social forum where students could communicate about non-academic matters. A second forum was 'Help!!', which could be used by students to request help about the virtual classroom, but not academic help.

Top

8. Student experience

8.1 Factors related to the Internet/Web as a medium

- Students experienced limited access as an impediment
- Students experienced limited computer skills as an impediment
- Students experienced information overload
- Students experienced technical difficulties
- Students (some) wanted more thorough preparation
- Students experienced the construction of the virtual classroom as sensible.

8.2 Communicative aspects

- Students enjoyed the communication and support system, but some experienced it as inadequate.
- Some students wanted more face-to-face contact with lecturers
- Others liked absence of lecturers.

8.3 Motivational aspects

- The Internet is interesting and motivating
- Empowering, gained developmental and personal benefits from exposure to the Internet
- Students found the time, place and pace flexibility convenient
- Content of the subject as interesting and relevant
- Amount of control that they had in the virtual classroom was experienced as empowering.

Top

9. Lecturer Experience

9.1 Affective experiences

- Enjoyment
- Believed that students were empowered
- Frustration (due to student mishaps/lack of skill)
- Uncertainty (pace of deployment).

9.2 Student proficiencies and deficiencies

- Amount of access influenced student experience
- Level of support that students needed was determined by their computer and Internet skills
- Realised the need to prepare students.

9.3 Pedagogy

- Dissatisfied with the collaborative assignments
- Need for effective support structures (Winnips and Collis)
- Uncertain about the pace of the deployment
- Different application of pedagogical/didactic principles
- Believed that the virtual classroom enabled high quality interaction
- Content had to be adapted
- Allow for constructivist teaching approaches.

Top

10. Conclusion

It is acknowledged that trends and applications of online education in first-world countries cannot be used as a yardstick to determine the acceptability of online education. In South African contexts, students have different levels of direct access to the Internet as in the rest of the developed world, as well as having different computer and Internet skills. Whether online education is an acceptable alternative to conventional education can only be determined by students in those contexts.

Students and lecturers generally reported favourably on their experience in the virtual classroom. They found the virtual classroom motivating, enjoyable, and exciting. They found that their knowledge and skills in terms of the Internet empowered them, as these skills could be used for their teaching careers as well. Furthermore, they found the communicative and support structures beneficial and they enjoyed the pace, place and time flexibility as well as the amount of control that they had in the virtual classroom. Lecturers reported that virtual classrooms are underpinned by pedagogy that enhances learning.

Some problems were experienced during the implementation. These problems were related to issues of access, computer skills and the level of preparation of students. Other problems had to do with the implementation by the lecturers. The management of assignments was specifically identified as problematic.

None of the identified problems can be considered as insurmountable. Students should be prepared more thoroughly, which could negate the problem of lack of computer skills. Lectures can very easily adopt or change teaching practices in the virtual classroom. The only problem that lecturers have very little control over is the issue of the direct access that students have to the Internet. However, students indicated that they were prepared to travel to

the university to access the Internet. They would have travelled there anyway, but with this method they have more flexibility.

In terms of student experience and lecturer experience of the virtual classroom as reported in this study, as well as in terms of world-wide and local trends, and in terms of pedagogy, is must be concluded that online education can be considered an acceptable alternative to conventional, face-to-face education and that Information Technology in Education can be presented in this way.

Top

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