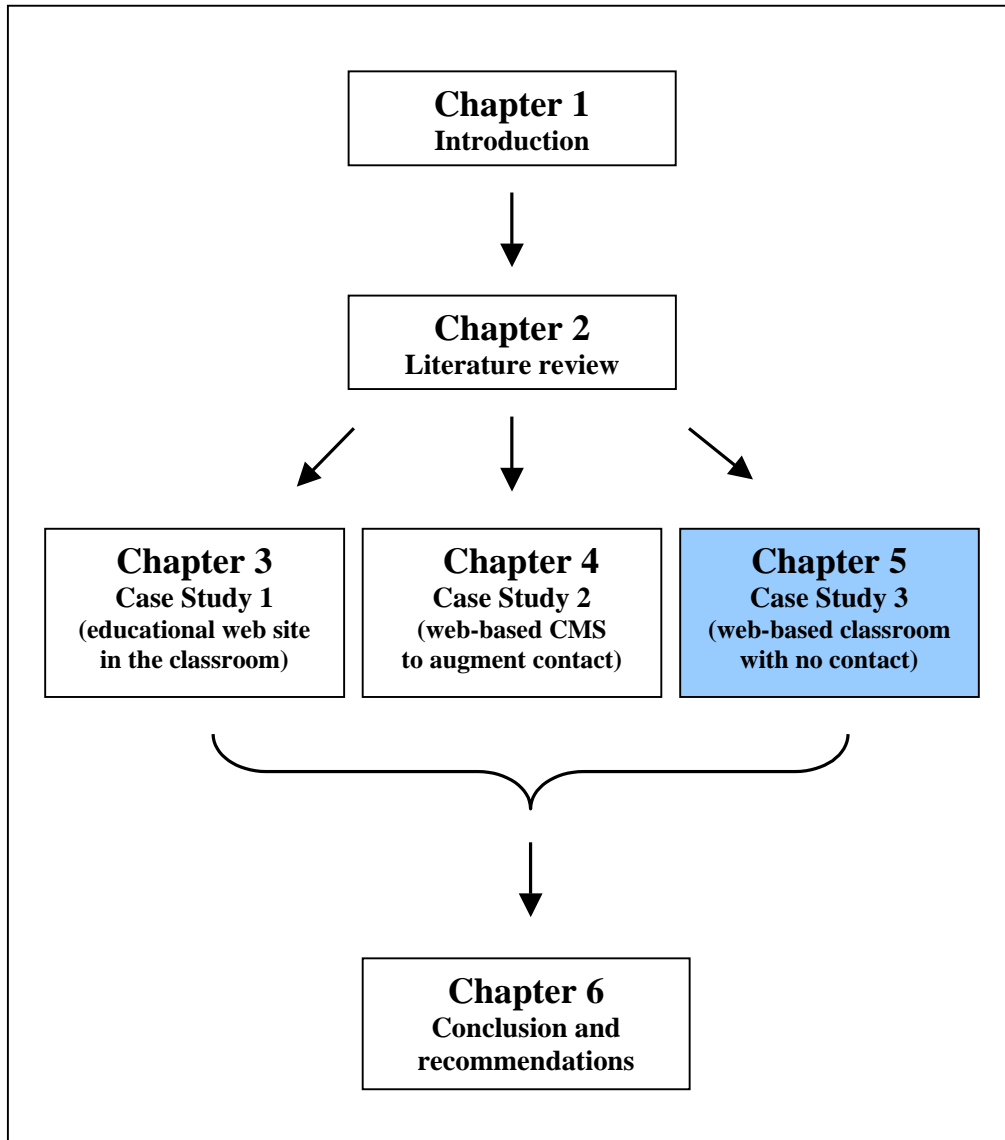


Chapter 5

Case Study 3: Investigation of a postgraduate web-based classroom



5.1 Introduction

This chapter reports on the final case study, namely, the investigation of a postgraduate Internet-based course that was run in 1999, taking the form of a “web-based classroom”.

The research investigates the Internet-based delivery of a master’s level course, on the subject of Internet-based learning. The course had initially required postgraduate/adult learners (henceforth referred to as learners) to travel to the University of Pretoria from their various home regions, spread across South Africa, for face-to-face interaction and contact time. From 1997 onwards, the course was presented solely by means of a “web-based classroom”, giving learners the opportunity to enrol for a course that was both computer-delivered and accessible country-wide via Internet and e-mail links.

The goal of this chapter is to investigate the overall usefulness of a course run entirely on the Web, and to investigate the response of two types of adult learners, namely those taking the course as a formal postgraduate course, and those taking it informally in a continuing-education context.

The case study commences by listing the relevant research questions, followed by a literature review and an outline of the learning context (international, national and institutional), within which Internet-based learning is situated in South Africa. This is followed by the research methods used to conduct the research, an outline of the study, the results and, finally, a summary and recommendations.

5.2 Research questions

The researcher set to answer the research questions listed in Table 5.1 and assess whether there was a difference in the responses of formal and informal learners to a course run entirely on the Web. These questions are asked and responses measured under the four main aspects covered in this dissertation, namely: andragogical, affective/emotional, communicative and technological (see Table 5.1).

Table 5.1 Subquestions relating to aspects under investigation in Case Study 3

	Aspects	Research subquestions
Case Study 3	Andragogical	<ul style="list-style-type: none"> ▪ To what extent was the course, with no face-to-face contact, effective in supporting the needs and learning of postgraduate learners? ▪ To what extent can collaborative learning be effectively stimulated on the Internet?
	Affective/emotional	<ul style="list-style-type: none"> ▪ What emotions, likes and dislikes do postgraduates learners experience in a fully online course?
	Communicative	<ul style="list-style-type: none"> ▪ How effective was the design of the web-based material in facilitating learning? ▪ What features characterised the human-human interaction?
	Technological	<ul style="list-style-type: none"> ▪ What technological problems are encountered in a fully online course?

5.3 Literature review

The study explores the usefulness of a web-based classroom for adult learners in a formal postgraduate course, as well as for adults taking the course informally in a continuing-education context. The web-based classroom ran entirely on the Web, placing it at the highest level of Harmon and Jones's (1999) levels of web use, i.e. immersive use of the Web (see Chapter Two, Table 2.1).

A web-based classroom is sometimes known as a "virtual classroom", however the latter term is copyrighted by the New Jersey Institute of Technology (NJIT) (Hiltz and Wellman, 1997). Therefore, for the purposes of this research, the term "web-based classroom" will be used.

Clarke (1998) defines a web-based classroom as a computer-accessible, online learning environment attached to the WWW, which delivers material to adult learners at locations other than the course delivery centre, and which simulates aspects of a physical environment.

According to the NJIT, a virtual classroom is an electronic information exchange system, with specialised software that supports collaborative learning, where members can exchange information, provide and receive support, and develop a sense of belonging (Hiltz and Wellman, 1997).

For the purpose of this dissertation, these definitions are integrated to define a web-based classroom as an online learning environment attached to the Web, which supports collaboration between learners through Computer-Mediated Communication (CMC), within the context of constructivist learning. It delivers material to adult learners at locations other than the course delivery centre and simulates aspects of a physical environment.

Web-based classrooms, supplemented by telecommunications media, are currently being used in tertiary institutions worldwide, offering web-based courses for adult learners who work full-time but seek further education (Gunawardena, 1999; McMahon, 1997; Owston, 1997). Tertiary education faculties, matric teachers and business trainers alike are turning to the World Wide Web as a vehicle for implementing instructional innovations (Khan, 1997; Owstan, 1997; Shaw and Polovina, 1999). Miller and Miller (1999) believe that the avalanche of web-based courses in higher education have been fuelled by the following:

- The widespread availability of, and access to, the Internet;
- a learner population that is increasingly non-traditional; and
- occupational factors that require worker re-education.

Many adult learners attempt to achieve their goal of further education via distance learning options (Chyung, 1999). Although there have been many success stories relating to web-based classrooms, learners and academic staff who operate in this environment may nevertheless encounter barriers to success that do not exist in the traditional face-to-face classroom.

Some of these barriers include characteristics of adult learners themselves, teaching strategies that allow success in other environments but do not translate to success in the online world, and the barriers created by the technology itself and the ways that learners and educators use it (Hillesheim, 1998).

Adult learners are more likely to have insecurities about learning (Knapper, 1988) as a result of financial, family and work-related barriers; lack of experience and training, particularly with reference to technical issues; feelings of alienation and isolation; as well as a lack of support from family and friends, employees, colleagues and teachers (Galusha, 1998). These pressures can result in high drop-out rates. With regard to family and work-related barriers, a professor who enrolled for a web-based course, but who dropped out due to a busy schedule, made the following confession:

The things that made me a dropout are the same things that make the Web so compelling. The beauty of "anywhere, anytime, wherever you want," too readily turns into not now, maybe later, and often not at all. Lacking a dynamic instructor, powerful incentives, links to the job and fixed schedules, web learning is at a dramatic disadvantage in capturing and holding attention. In my pyjamas, near computer, phone, refrigerator, cats and pals, it was just too easy to do everything except my Web class (Rossett, 2000).

Moore and Kearsley (1996) also view retention as a significant challenge associated with distance education. Historically, drop-out rates have ranged from 30 to 50 percent (Hill and Raven, 2000). Chyung (1999) gives three possible reasons why adult learners may drop out, correlating with the four factors in Keller's ARCS model, namely attention, relevance, confidence and satisfaction, and which influence the degree of learners' motivation to learn (Keller and Kopp, 1987). These reasons are given below:

- Learners lose their motivation to learn and quit learning when they do not perceive the instruction as interesting or relevant to their goal;
- they lose motivation when they are not confident of learning processes; and/or
- when they are not satisfied with the instructional processes.

On the other hand, the Internet is claimed to be one of the most powerful tools for providing lecturers and learners with necessary conditions for independent and interactive learning (Le, 1999). It provides a platform for an educational discourse in which learners can interact widely with other members of a learning community and, simultaneously, be in control of their own learning. Their interaction for learning can be immediate, prompt, widely shared and resource-supportive (Owston, 1997), which may not be possible in a traditional mode of teaching, confined by the classroom's physical condition (Le, 1999). Miller and Miller (1999) assert that collaboration occurs when learners:

- Communicate their understanding;
- listen to the views of others;
- explore alternative perspectives;
- are challenged in their beliefs; and
- challenge others.

Communication of this nature requires reflection and introspection for learners to make sense of their experiences. Engagement in real-world or authentic tasks provides a context within which learners construct meaning from their experiences. In order to engage learners in meaningful instruction, it is vital that the characteristics of adult learners be considered, as discussed in Chapter Two, section 2.3.3.

In constructivist learning environments, the predominant communication configuration is that of learners-to-learners. The instructor's role in communicating to learners (one-to-one/one-to-many) is not to dispense knowledge, but to coach or model meaning-making (Jonassen and Reeves, 1996).

Literature suggests that web-based classrooms have the potential to be extremely effective, especially in the way they can be used to support collaboration. It is, however, necessary to test whether the benefits are indeed what literature claim them to be. Hence the need to conduct evaluations on different groups of learners, formal and informal alike, making use of this powerful new medium (Reeves, 2000).

5.4 Context

In this section the international, national and institutional context of web-based adult learning will be discussed, and a description of the target population will be given.

5.4.1 International context

A paradigm shift is currently taking place, from an industrial-based society to a knowledge-based society (Marchionini, 1999). This shift tilts the balance of what is valued in current work and society. Consequently, this changes what is needed to prepare for life and work in society (Trilling and Hood, 1999). Trilling and Hood (1999) believe that the purpose of education - cultivating knowledge and skills - becomes the centerpiece of the age. Recent years have seen tremendous growth in the number of web-based courses globally, of which a significant proportion is provided, not by traditional academic institutions, but by online profit-making organisations (Shaw and Polovina, 1999). As a result, universities can no longer rely solely on their earlier advantage of exclusive access to the resources for assisting learners to gain a higher education qualification (Shaw and Polovina, 1999). While the threat is not immediate, early action to seek a competitive stance in the market is imperative. There is thus an urgent need to evaluate the usefulness of existing web-based courses to examine how and where the Web can be put to the best use in differing situations in adult education.

5.4.2 National context

South African universities have been called upon to make significant changes to their curricula and teaching methods. The Department of Higher Education has adopted an Outcomes-Based approach to education, the quality of which is assured by SAQA (South Africa, 1997b). OBE focuses on learner-centred education, aligned with the constructivist principle that the learner must construct meaning (Virtual Campus, 1998b).

5.4.3 Institutional context and target population

The target population of this study consists of adult learners taking the course on both a formal and informal basis. In 1999, only a small number of MEd learners registered for the course. Such a small number of learners would mean very little interaction on a mailing list – making it difficult to create a feeling of community. To increase the numbers, the instructor admitted learners who were not formally registered for the MEd degree. Table 5.2 presents an overview of the characteristics of both these groups of learners.

Table 5.2 Description of the learners participating in the web-based classroom

Characteristic		Formal learners	Informal learners
Number of learners registered for the <i>RBO</i> course.		7	15
Gender	Male	3	6
	Female	4	9
Employment status	Full-time employment	6	15
	Part-time employment	1	
Learner status		6 registered MEd learners 1 registered for MA (Information Science).	15 enrolled for non-degree purposes.
Age range		From early twenties to mid-fifties	From mid-thirties to mid-fifties
Previous contact		All, except one, had worked together on projects the previous year.	Most had not met face-to-face.
Intellectual/academic ability of the registered <i>RBO</i> learners in terms of how homogenous or mixed they were.		Reasonably homogenous	Very diverse
Levels of:			
▪ Computer literacy/experience		Reasonably homogenous	Very diverse
▪ Internet, web literacy/experience		Extensive background to a basic background.	Extensive background to no background.
▪ Motivational levels		Poorly to moderately motivated learners	Moderately to highly motivated learners
Location of learners		Highly dispersed	Highly dispersed

When investigating the current performance of learners, it was found that their prior knowledge of the Internet was either extensive, basic or non-existent. Internet skills of the informal learners ranged from inadequate to a high level of experience or skills, able to move at a rapid pace. The formal learners were generally at a similar level of expertise.

Table 5.2 indicates that a large number of learners on the course (i.e. 15 of the 23) were not following the formal masters course. These learners are referred to as “informal learners”. They were not the instructor’s typical learners but were admitted to the course since there were only a few official enrolments. Seven of these learners were studying in a continuing-education context. Three had taken the course in the past and two were guest-students, having been invited to the course by the instructor. A further three were from Rhodes University, intending to do a University of Pretoria course as a credit towards their Rhodes University degrees. The different groups admitted to the course are discussed below.

Observers

The learners who had previously taken the course had provided the instructor with such useful hints for future improvements that he asked them to continue with the course in 1999 as observers, to see if it had improved/deteriorated. The instructor selected them more for the value they could add to the course than for the value they could derive from it. The choice was theirs whether or not to participate in the discussion.

Guests

The two guests were the Webmaster of the University of Pretoria and a friend of one of observers. The Webmaster was invited to take the course to see the joys and frustrations experienced by instructors and learners on the Web. In addition, she wanted to find out for herself the requirements of learners and staff for web-based courses and she remained in the background to correct any problems that might arise during the course.

The other guest was an expert in the field of Multimedia Interactive Computer-Assisted Education, and the instructor invited her so that she could experience participation in an online course at first hand.

Learners from Rhodes University

Taking the course was a group of learners from Rhodes University. Their instructor was investigating to what extent universities could collaborate by presenting joint courses. In fact the collaboration turned out to be unsuccessful, possibly owing to different standards of expertise at the entry level.

Motivation

Seeing that this study investigates affective/emotional aspects, it seems fitting to examine what motivated learners to take the course.

At the outset of the course, learners were asked to explain their reasons for taking the course. These were examined and it was found that initially, the informal learners seemed to have a higher interest level in the course and were more motivated than the formal learners. The informal learners were interested in doing the course to learn more about teaching, learning and communicating on the Web and the Internet, so that they, themselves, would be able to use it for educational purposes, or to enhance their existing usage. This is evident in the following quotes extracted:

I hope to fill in enormous gaps in my knowledge of educational theory and practise and have it on good advice that this is the course to do! I also think it is important to have experienced an online learning environment before one can adequately address some of the problems that students may face. So I hope to put myself through an already tested “ring of fire” before subjecting anyone else to it.

I would like to learn about distance teaching on the Internet and how the Internet will influence “the classroom without walls”.

I would like to know how the experience I have gained over many years as an adult educator translates into Internet-based education, and I think an excellent way to learn that is to experience an online course myself. I am excited about the possibility of creating innovative learning experiences on the Internet.

The formal learners, on the other hand, were doing it because of career opportunities, or as one of their nine modules. This is evident in the following quotes extracted:

Between two evils I always pick the one I’ve never tried before. They say the medium is largely race-neutral, location-neutral, status-neutral, age-neutral, personal, friendly and inclusive.

I’m doing this course because I don’t want to be a teacher for the rest of my life.

I have a school to drag into the 21ST century.

Curiosity about the hidden (for me) inside story of Telematic Education and as the sixth of nine modules for the MEd (IT).

5.5 Method

This research has both a non-experimental survey design, as well as a qualitative ethnographic design (McMillan and Schumacher, 1993). The research is primarily a qualitative study, but quantitative measures were taken to triangulate the data. A questionnaire, which is shown in [Appendix D](#), was completed by the learners. Qualitative measures were used in the questionnaire (where open-ended questions were used), participant observation and the interview with the instructor. Quantitative measures were taken in the questionnaire sent to all the learners after completing the course (where Likert scaling was used), as well as an analysis of messages sent to the discussion list and bulletin board. Multiple research methods were used to validate the results generated from the questionnaire, i.e. triangulation was applied.

In total, three questionnaires were sent to learners taking the course. Two were sent by the instructor himself during the duration of the course, and the third was sent by the researcher, after learners completed the course. The end-of-course questionnaire was completed by seven formal learners and six informal learners, for the purpose of learner- evaluation, so as to gain information on its overall usefulness.

The researcher interviewed the instructor to obtain his insights and in-depth understanding of the course. The final method was participant observation, in which the researcher was an actual participant in the web-based classroom and was therefore in an ideal position to observe the events that took place within the classroom, and able to gain essential information on the dynamics between the two groups of learners within the class.

5.6 Course outline

In this section the background, objectives, components and the instructional strategy of the course are described and discussed.

5.6.1 Background

RBO880 (hereafter referred to as *RBO*) is the computer code for the course Internet-based learning. The course is studied in the second year of the part-time two-year Master of Education (MEd.) degree programme in Computer-Integrated Education (CIE) at the University of Pretoria, South Africa. The degree programme consists of five compulsory modules and a selection of four electives from a possible eight, followed by a dissertation. The *RBO* course is one such elective. In 1999 the course was presented in the first semester, from the beginning of February to the end of April, and this particular presentation is the one evaluated in this case study.

RBO was initially offered in 1993 as a self-study literature module with no Internet connectivity. Subsequently, it incorporated increasing use of e-mail and Web access with each succeeding year, plus some face-to-face contact time. In 1997 the course changed to an Internet-based presentation, for the following reasons:

- It facilitated delivery of material across a distance, including graphics and tables;
- it accommodated distance learners by obviating the need for trips to Pretoria;
- it provided opportunities to participate in long-term projects, unconstrained by limited contact time, as had occurred in earlier courses; and
- it provided a platform to display learners' projects, as well as course material.

The fundamental goal of *RBO* is to contribute towards achieving the goals of the MEd (CIE). One of the goals of the MEd is to produce consultants in the field of Computer-Integrated Education (CIE). Within this context the specific goal of *RBO* is **to provide consultants in the CIE field, with the necessary skills to consult in Internet-based learning.**

5.6.2 Outcomes of the course

Learners were required to achieve the following outcomes:

- Competently use various Internet tools and have a sharpened Internet literacy.
- Learn about usage of the Internet and the Web in education, whilst actually using the Internet and the Web.
- Develop the ability to work collaboratively with other learners, at a distance.
- Be able to build their own constructivist learning environment using the Internet and the Web.
- Possess the theoretical and practical know-how to use CMC for managing and facilitating technology-based learning.
- Realise the complexity of the Internet and the Web, and the associated difficulties with them.

Achieving these outcomes would give learners a unique meta-learning experience, that is, teaching “teaching on the Internet” on the Internet (Cronjé and Clark, 1999). The course content was divided into two aspects – educational aspects and physical aspects. Educational aspects covered such themes as:

- Network-based learning;
- aspects of distance learning and the Internet; and
- management of network-based learning.

Physical aspects were concerned with the practical competencies learners should display with the following technologies: e-mail, discussion lists, chat groups, FTP, zipping and news groups. Learners also had to find their own free web space and write elementary Hypertext Markup Language (HTML).

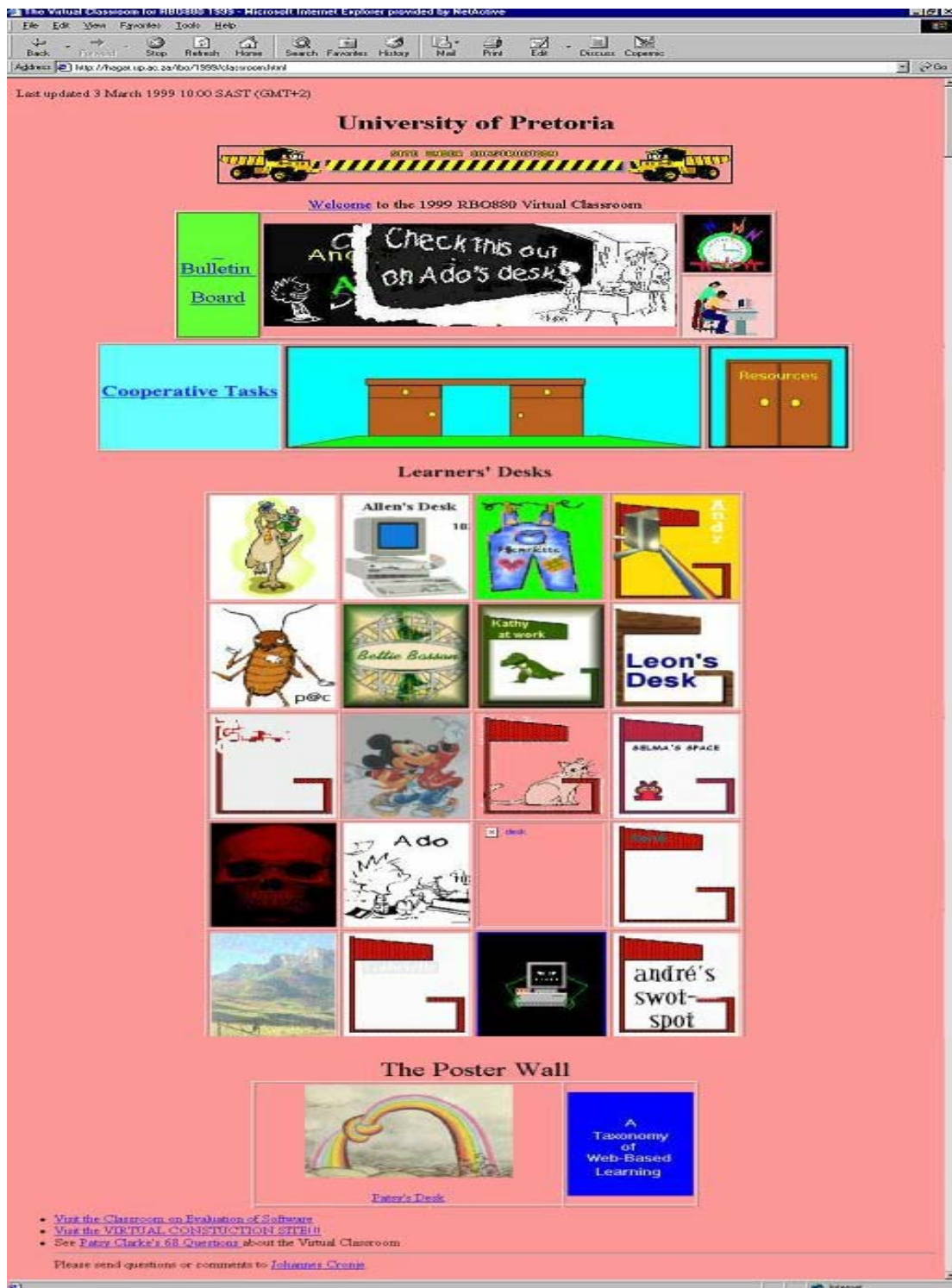
5.6.3 Components of the web-based classroom

The web-based classroom had two components: the web site and the discussion list. The web site used the metaphor of a real physical classroom to motivate learners and place them within a familiar environment, while the discussion list was set up to facilitate interaction and communication among the learners in the course.

The web-based classroom can be viewed at: <http://hagar.up.ac.za/RBO/1999/classroom.html>.

The classroom was divided into four sections, namely the blackboard and notice board, instructor's desk and resource cupboard, poster wall and the space for learners' desks (Cronjé, 1999). Figure 5.2 presents a printout of the opening screen, where the different sections can be seen. The discussion that follows indicates how the instructor used each section.

Figure 5.1 Opening screen of the web-based classroom



1. *Blackboard, notice board and bulletin board*

The blackboard was a graphic file which learners could access and edit, making it the equivalent of graffiti one would find in a physical classroom. Clicking on the blackboard gave comprehensive online study guides. Clicking on the notice board revealed the timetable and tasks, similar to the situation that would be found in a physical classroom. Clicking on the bulletin board took learners to an additional communications tool the instructor added to the course. Figure 5.2 gives an extract of this tool. Used in the way that the instructor used it, this tool proved remarkably effective, namely:

- For posting learning tasks, and then referring learners to it;
- for posting follow-ups on different topics/assignments and for threaded discussions; and
- as a backup for static information.

2. *Instructor's desk and resource cupboard*

The instructor's desk was linked to his home page, with his curriculum vitae and links of general interest. To the left of his desk was a link to the collaborative tasks and to the right, the resource cupboard, which offered links to subject matter and web site construction programs, such as graphic tools and HTML editors.

3. *Poster wall*

The poster wall had links to projects by learners from previous years, as well as to the collaborative "posters" created by the learners as the course progressed.

4. *Space for the learners desks*

Each learner was assigned a directory that was linked to a desk graphic. The learner had to replace this graphic with a personalised one and manipulate it in any way they like. They then had to "fill the desk" with things typically found in a school desk:

Your ears (Mailto: ...)

Your utility bag (Links to handy stuff such as HTML editors, Search Engines, Clipart libraries, etc.)

Your textbooks (Links to useful sites)

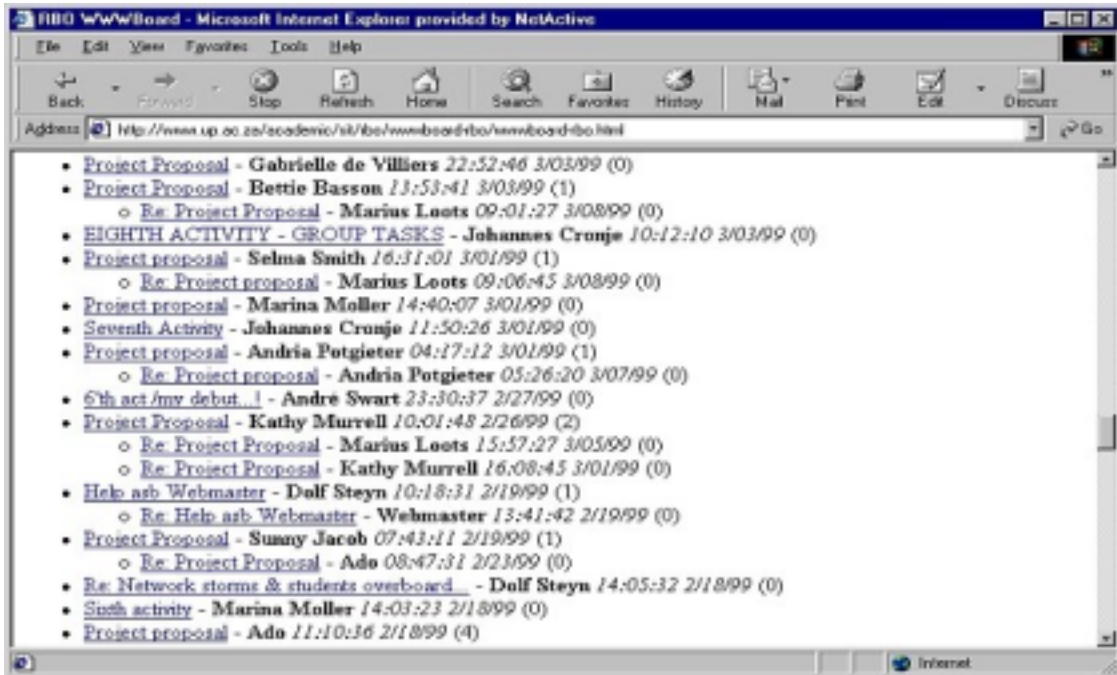
Your work (Interesting stuff you have done in other MEd modules)

Your hobbies (Personal info and/or links to sites of special interest to you)

Your class work (Your answers to all the objectives of the course)

Your portfolio (A link to the portfolio of your examination project)(RBO880 Curriculum, 1999).

Figure 5.2 Extract from the bulletin board



5.6.4 Instructional strategy

The learning theory on which *RBO* is founded is constructivist, constructionist (Papert, 1993) and collaborative. Constructivism is based on learners actively constructing their own knowledge (Tam, 2000). Collaborative learning emphasises group or co-operative efforts among academic staff and learners, and stresses active participation and interaction on the part of both learners and instructors. Knowledge is viewed as a social construct and therefore the educational process is facilitated by social interaction in an environment that facilitates peer interaction, evaluation and collaboration (Hiltz, 1995).

In the *RBO* course, learners are required not only to construct their own meaning but also to construct individual and collaborative web pages around certain real-world situations and problems. In constructing their own web pages, in the form of a hypertext knowledge base, learners are required to use higher order thinking skills (HOTS). In this way, the web site is used as a **construction or dumping site**, which according to Khalili and Peté (1999) is the most advanced use of the Web for learning, as it facilitates the process of learners actively constructing their own knowledge. Berenfield (1997:4, in: Khalili and Peté, 1999) states that "... virtual publishing can authenticate learning by setting students' scholarship in the real

world.” The advantage of such publishing is that learners can benefit from the knowledge of other learners, due to their access to one another’s contributions.

The course began with an introductory session on the bulletin board, where learners introduced themselves and gave their motivation for doing the course. Learners then worked on their desks. The collaborative period followed, where learners built “posters”, working in groups of three to four on a task. The collaborative tasks met Johnson and Johnson’s five prerequisites for effective collaborative learning, namely: positive interdependence, individual accountability, a mutual goal, face-to-face promotive interaction and social skills (Johnson and Johnson, 1999), as discussed in Chapter 2, Section 2.2.1.3.

Finally, learners had to submit proposals for their individual three-month, web-based projects. These had to be discussed on the bulletin board, executed and published in their own desk (see Figure 5.1).

The instructor deliberately avoided supplementing the web-based classroom with face-to-face contact, which would have been at the expense of pure distance learning. Distance learning was an inherent objective of the course – the idea being to study distance education by means of distance education. If the instructor had a face-to-face contact session, he could have got more information across to them in tangible format, that is, if he wanted it to be more behavioural, but it would have lost out on constructivism. The following quote indicates what the instructor set out to achieve.

I wanted them to experience what it feels like when they are actually at a distance without contact. In fact, when some things don’t work, that’s also OK, because then they also learn how NOT to do things (Cronjé, 2000b).

The *RBO* web-based classroom was therefore the means by which learners would actively learn and collaborate via the Internet and the Web and, in the process, experience the different aspects of Internet-based learning, and its benefits and pitfalls alike.

5.7 Results

This section describes the findings that emerged and attempts to answer the research questions. These questions are divided into four aspects relating to the usefulness of Internet-based learning, namely: andragogical, affective/emotional, communicative and technological aspects, and are discussed in turn in the sections that follow.

Percentages were computed for all these questions on a four point Likert scale which ranged from (1) strongly agree, (2) agree, (3) disagree, to (4) strongly disagree. For the purposes of analysis, however, categories one and two are combined under the label "agree", as are categories three and four, under the label "disagree". A table with subquestions is given for each aspect. These tables give a list of the subquestions, with percentages for the two groups (i.e. the formal learners and the informal learners). The final column (Δ) in these tables represents the difference between the two groups, that is:

$$\Delta = \text{formal learners value} - \text{informal learners value.}$$

The difference between the responses of the two groups is also depicted in figures below certain tables. The end-of-course questionnaire was completed by seven learners from the group of formal learners and six learners from the group of informal learners (fifteen questionnaires were sent out to the informal learners and six were returned). The numbers in brackets within the tables, reflect the number of respondents. These results are tentative, seeing that a small sample size was used.

5.7.1 Andragogical aspects

In this section, the extent to which the course was effective in supporting the needs and learning of learners is discussed, as well as the extent to which collaborative learning can be effectively stimulated on the Internet.

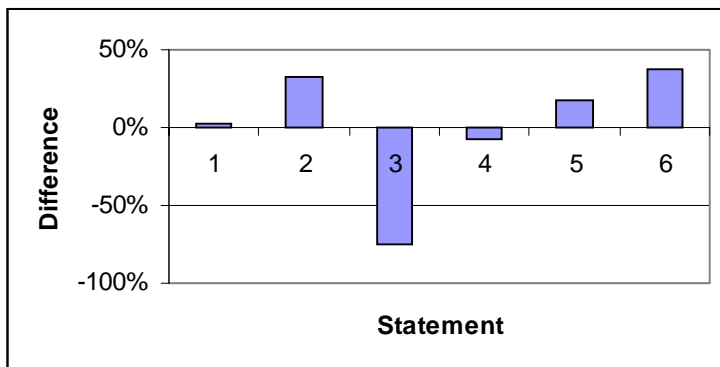
5.7.1.1 To what extent was the course, with no face-to-face contact, effective in supporting the needs and learning of postgraduate learners?

Table 5.3 and Figure 5.3 depict the differences and similarities in learners' response to various statements regarding the extent to which the course was effective in supporting the needs and learning of adult learners. Notable differences in the response of the two groups are depicted in Figure 5.3, the most notable being the negative response of the formal learners with regard to the feedback and assessment they received from the instructor.

Table 5.3 Andragogical aspects

Statement		Group	Agree	Disagree	Δ
1.	The course adequately guided, facilitated and enhanced my learning.	Formal learners	86% (6)	14% (1)	3%
		Informal learners	83% (5)	73% (1)	
2.	The course met my needs as an adult learner, i.e. relevant, self-directed, self-paced, flexible, hands-on, etc.	Formal learners	100% (7)	0%	33%
		Informal learners	67% (4)	33% (2)	
3.	The course supplied feedback to and assessment of our various tasks.	Formal learners	0% (0)	100% (4)	-75%
		Informal learners	75% (3)	25% (1)	
4.	The course facilitated collaborative tasks between learners.	Formal learners	57% (4)	43% (3)	-7%
		Informal learners	67% (4)	33% (2)	
5.	The course was a real learning experience.	Formal learners	100% (7)	0%	17%
		Informal learners	83% (5)	17% (1)	
6.	I experienced overload and/or anxiety.	Formal learners	71% (5)	29% (2)	38%
		Informal learners	33% (2)	67% (4)	

Figure 5.3 Areas of difference between the two groups, with regard to andragogical aspects



Nearly all of the learners in both groups agreed that the course adequately guided, facilitated and enhanced their learning (formal learners: six of the seven (86%); informal learners: five of the six - 83%). Ference and Vockell (1994) indicate that one of the needs of adult learners is to be independent and responsible for planning and directing their own learning activities. In this regard, both groups of learners commented that this worked well for them in *RBO* (formal learners: all the learners - 100%; informal learners: four of the six - 67%).

Due to the fact that these adult learners were part-time learners, and independent, five of the seven formal learners (71%) experienced overload and anxiety at some point in the course. This was mainly due to difficulty in complying with the deadlines set by the instructor. As a result, several of them completed the course several months later. It was interesting to note that only two informal learners experienced overload and/or anxiety. One commented that it was difficult to keep up to date, when it was an add-on to a large body of other commitments, while the other was anxious because some learners in the course were not communicating anymore, or were dropping out, and she suspected intimidation might have played a role.

There was a notable difference (75%) in the response of learners to the statement: “The course supplied feedback to and assessment of our various tasks” (see Figure 5.3). In the response to the open-ended questions, three of the seven formal learners responded that they wanted feedback to know if they were on the right track, in contrast to only one of the informal learners, who indicated that he would have liked more feedback. The difference in the response of the two groups could be due to the fact that the formal learners were accustomed to frequent tests and quick turnaround time, within a highly structured conventional learning paradigm. Within this background they all noticed the lack of direct feedback in *RBO*. The informal learners, on the other hand, had lower expectations in terms of assessment and three of the four were satisfied.

Both groups of learners responded that the course facilitated collaborative tasks (formal learners: four of the seven - 57%; informal learners: four of the six - 67%). This aspect is discussed in more detail in section 5.7.1.2. These results indicate that informal learners attach more value to working collaboratively over a distance.

The majority of learners in both groups agreed with the statement that the course was a real learning experience (formal learners: all the learners - 100%; informal learners: five of the six - 83%). Three formal learners commented that one of the most important things they learnt from the course was to find out things for themselves, which indicates appreciation of the constructivist approach to the course. One of the formal learners commented that “the digital classroom created a feeling of cohesiveness - we were in this together and we had to pull through”. Learners also found the course useful in their personal and professional lives. Five of the seven formal learners appreciated the

practical skills they gained from the course and commented on the impact it had had on the way they do things at work. For two of the informal learners it highlighted some of the problems of distance learning, with one learner commenting:

The opportunity to indulge myself in an online course was invaluable. It has given me a “students” perspective, including the problems associated with technology.

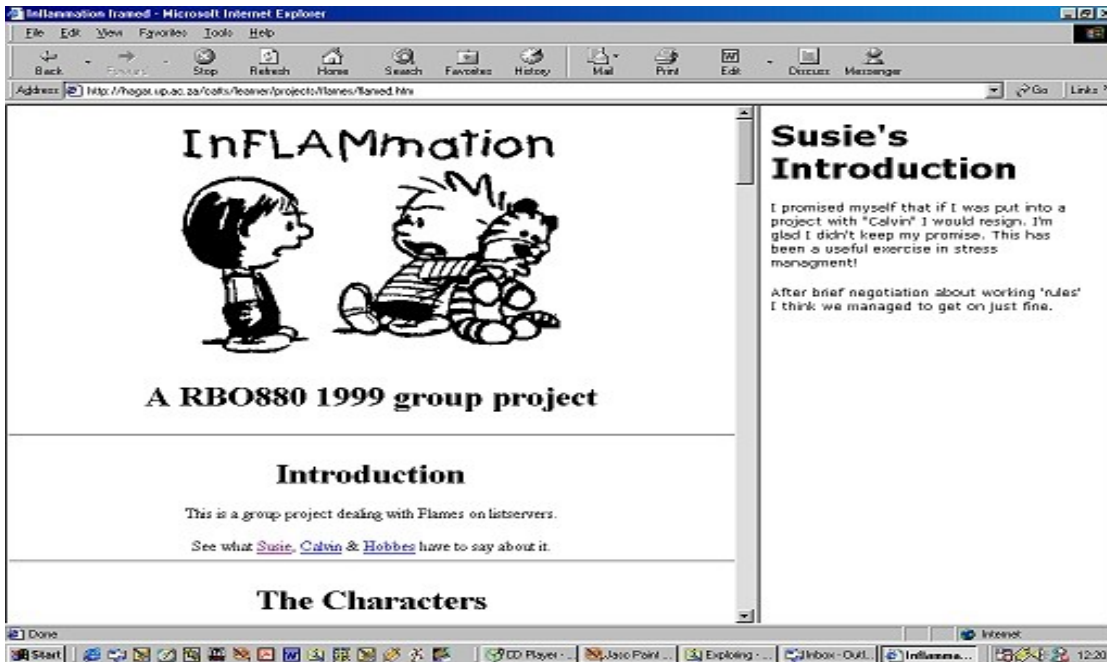
5.7.1.1 To what extent can collaborative learning be effectively stimulated on the Internet?

The Internet as a medium greatly facilitated collaborative tasks, when compared for example, with doing such tasks via conventional mail or telephone. In both groups, learners agreed that the course, without face-to-face interaction and contact time, facilitated collaborative tasks (formal learners: three of the five - 60%; informal learners: four of the six - 67%) - see Table 5.3. The collaborative tasks helped the learners to get to know each other better and reduced the social isolation associated with the use of technology. Nevertheless, two of the formal learners and one of the informal learners, respectively, would have appreciated face-to-face contact, as such contact would have helped them form impressions about the people with whom they were working.

On the whole, the collaborative group projects were effective. One group project was particularly successful in the way in which the instructor handled a difficult situation. Early on in the course a controversy arose between two participants who were both informal learners and therefore did not know each other. This supports King's (1995) statement (see Chapter 2, Section 2.2.2) that flame wars often erupt among strangers (newcomers to Internet discussion groups), and that new members of a particular group are often the source of, or the target of, inflammatory messages. The conflict continued, resulting in different reactions from the rest of the group. Some learners took sides, others remained silent. To resolve the conflict between these two learners, the instructor placed them together in a collaborative learning group. Their task was to “build a website dedicated to conflict and conflict management in virtual learning environments”. One of the instructor's graduates, a calm and serene individual, was used as the intermediary to “pour oil on troubled waters”. They called their task “inFLAMation” and came up with the very appropriate metaphor of Susie, Calvin and Hobbes.

Figure 5.4 presents the opening screen of their site on conflict in virtual learning environments.

Figure 5.4 Opening screen of “inFLAMmation”



One member of the team played the role of Susie, the other that of Calvin, while the peacemaker took the part of Hobbes. The character of Susie is depicted in Figure 5.5, while Figure 5.6 shows Calvin’s view of a flame. The perpetrator (taking the role of Calvin) was without a doubt, more blunt and uninhibited than he would have been in face-to-face contact, and very likely took liberties, taking the anonymity of cyberspace as an excuse to be rude, as King (1995) suggests.

Figure 5.5 Character of Susie

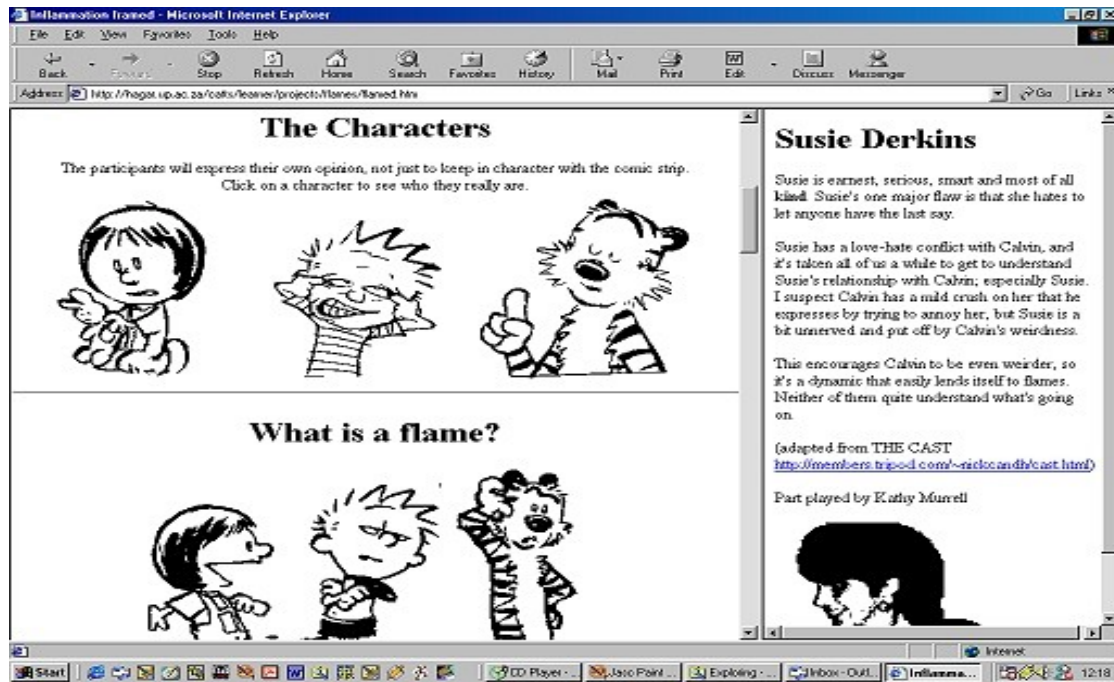
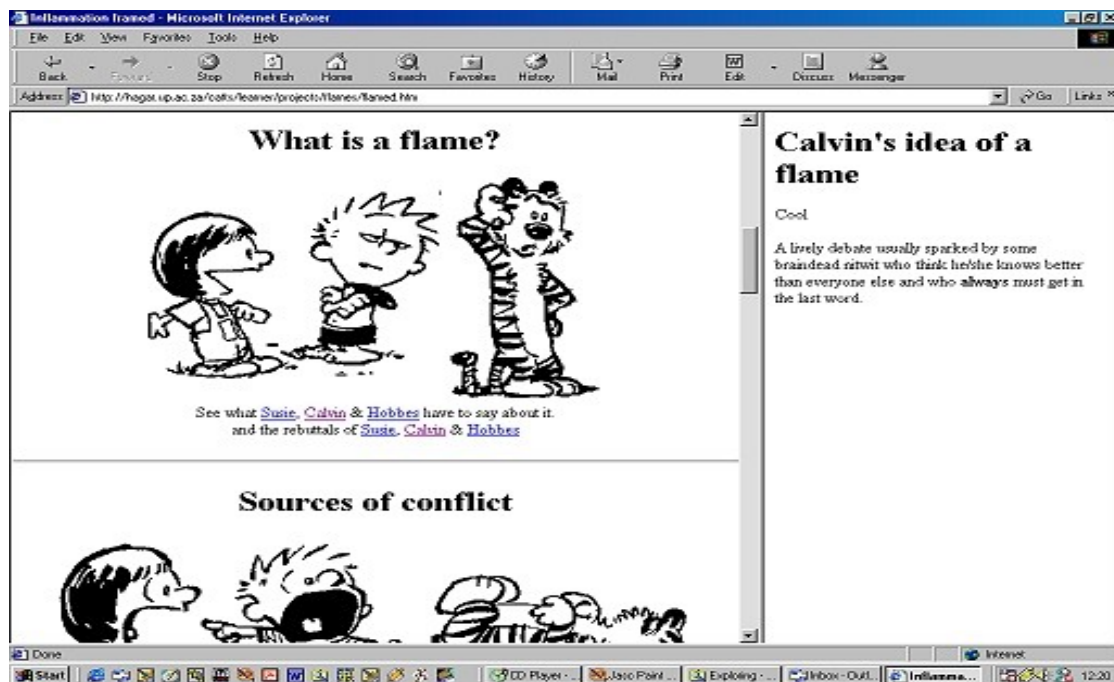


Figure 5.6 Calvin's view of a flame



One of the observers on the course commented:

That the facilitator's eventual solution to group the perpetrator of the 'flaming' together with a main target of his 'flames' plus one other (highly) suitable facilitative personality into one group for a project was the most brilliant solution I have observed to date. It resulted in a highly creative and successful project.

This group project was very effective because it sorted out the conflict between these two learners. The other group tasks ranged from being ineffective to very effective. The positive factors that contributed to group tasks are discussed in Table 5.4, while negative factors that were counterproductive in group tasks are discussed in Table 5.5.

Table 5.4 Positive factors that contributed to collaborative tasks

Factors	Description
Communication	<ul style="list-style-type: none"> ▪ The use of the discussion list, which was used by three groups to conduct their collaborative group task (learners were instructed to build various features). This communication provided the instructor and the other learners with more access and insight into the learning processes learners follow. The other groups conducted their collaborative tasks through private communication.
Participation	<ul style="list-style-type: none"> ▪ Learners generally made suggestions, and then took the initiative, in the way of offering to do an activity, and then following through. Once they had completed this activity, they asked their group members to review it. An important part of support within certain groups, was thanking and expressing appreciation for completed work, especially if it was work done well.
Effective grouping of learners.	<ul style="list-style-type: none"> ▪ The instructor placed all the headmasters together in one group, to build the mother of all resource sites for “The Internet in Schools”, and placed the two learners who were in conflict with each other in one group. ▪ The instructor allocated a role to each learner in a group, according to their specific skills. Three primary roles allocated to learners were the architecture of the site, look and feel, and technological and authoring. This was effective, in that learners could collaboratively construct a part of the product that matched their level of skill, and at the same time, learn from each others’ respective roles. This saved time and made for effective group work.
Motivation	<ul style="list-style-type: none"> ▪ The instructor initiated a conversation on the design of one of the collaborative tasks, that is, “inFLAMation”. He asked learners to express their own view, about the design of this site. Learners responded with valuable suggestions, which not only resulted in this specific group improving their final product, but also led to learners benefiting from the discussion, and applying some of the suggestions in subsequent tasks. For example, in this specific case, learners learnt how to resize frames, and factors that contribute towards effective web design.

Table 5.5 Factors that were counterproductive in collaborative tasks

Factors	Description
Medium	<ul style="list-style-type: none"> ▪ The electronic disappearance of some learners. These were learners who had hectic schedules in the case of the formal learners, and learners who dropped out of the course in the case of the informal learners. As a result, some learners lost their partners to cyberspace, and one collaborative task in particular was not as effective as it could have been, due to learners dropping out. ▪ Two groups of formal learners met face-to-face at some point in the collaborative task. They probably decided to meet face-to-face because they knew each other, in contrast to the informal learners who did not know one another. The instructor would have preferred it if learners had kept to the objective of the course, which was that they work entirely on the Web.
Time constraints	<ul style="list-style-type: none"> ▪ The collaborative tasks did not fit into some learners' time schedules. The idea was to allocate a certain time period to do their bit and then hand it over, but some learners exceeded their time frame. One of the formal learners felt that collaborative tasks do not work, because they all work to tight schedules and cannot wait for each other. ▪ One learner had a baby right in the middle of the course. This drastically reduced the amount of time she could spend on the collaborative group task.
Team membership	<ul style="list-style-type: none"> ▪ Work allocation problems occurred when learners dropped out of the course. ▪ An informal learner felt at lost since she was not an MEd learner, but was in the group which had to build a museum for the MEd. She had to rely on the other learners in the group to guide her and to inform her as to what information to collect. This same learner also felt intimidation by the advanced skills of one of the formal learners in her group.
Technological problems	<ul style="list-style-type: none"> ▪ At times, learners were unable to access the University of Pretoria's server. ▪ Some learners experienced problems with their own servers. ▪ One learner had her computer hit by a lightning conductor.

5.7.2 Affective/emotional aspects

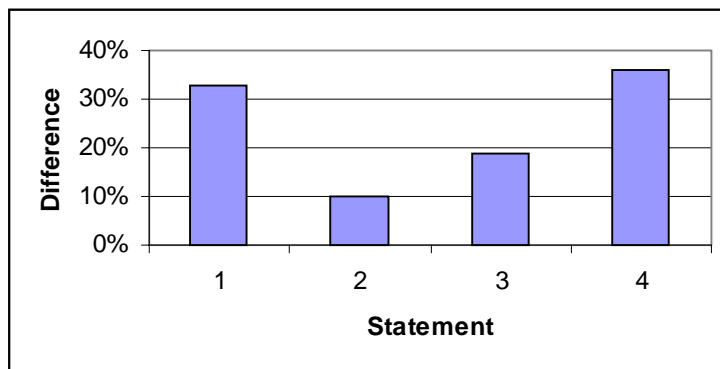
This section examines the emotions learners experienced during the course, and what they liked and disliked about it.

5.7.2.1 What emotions, likes and dislikes do postgraduate learners experience in a fully online course?

Table 5.6 and Figure 5.7 depict the differences and similarities in learners' response to affective/emotional aspects. The most notable difference was the negative response of the informal learners with regard to feeling a sense of community building. Otherwise, their responses to various statements are similar in nature, indicating that learners in both groups experienced similar impressions of the course.

Table 5.6 Affective/emotional aspects

Statement		Group	Agree	Disagree	Δ
1.	I felt a sense of community building.	Formal learners	50% (3)	50% (3)	33%
		Informal learners	17% (1)	83% (5)	
2.	The environment was supportive.	Formal learners	43% (3)	57% (4)	10%
		Informal learners	33% (2)	67% (4)	
3.	I found the course exciting.	Formal learners	86% (6)	14% (1)	19%
		Informal learners	67% (4)	33% (2)	
4.	The course met my expectations.	Formal learners	86% (6)	14% (1)	36%
		Informal learners	50% (3)	50% (3)	

Figure 5.7 Areas of difference between the two groups, with regard to affective/emotional aspects

Five of the six informal learners (83%) did not agree with the statement “I felt a sense of community building”. Among the formal learners, only 50% (exactly half) felt this way. The differences in their responses are evident in Figure 5.7. In addition, four of the seven formal learners (57%), and four of the six informal learners (67%), did not experience the environment as supportive.

The reason behind this unusually negative response in the informal group was that early in the course a controversy had arisen between two learners, when one misinterpreted the other’s sense of humour. The humour was subtle, but was perceived by the other learner as harsh, biting and humiliating (Cronjé, 2001). The instructor deliberately did not intervene, so as to see what would become of the situation and whether or not other learners would react. One of the formal MEd learners did step in, but failed to resolve the conflict, because he too misinterpreted this learner’s sense of humour. The conflict continued for some time and

when the instructor did decide to intervene, he was unable to do so due to network problems (Cronjé, 2001). Eventually, the instructor suspended the course for two weeks in order to:

- Calm the angry learners;
- sort out the technological problems; and
- allow the slower learners to catch up.

The conflict affected the self-esteem of two learners in each group, i.e. the group of formal learners and informal learners. However, in response to an open-ended question, the informal learners indicated that they appreciated the experience and came out stronger as a result. The following quotes depict certain learners' responses to the conflict, with the bracket behind the quote indicating the learner's group.

I learnt that group identity is not merely an issue of people seemingly working towards similar goals, and that one person (or a clash of personalities between two people) could sabotage the whole process (informal learner).

I questioned myself in relation to interactions with other people, and realised that I had taken for granted the rapport I have developed with colleagues in a face-to-face environment. This is an important learning curve for online learning so the experience is appreciated (informal learner).

I did not have a nice experience with the group of people (formal learner).

However, although learners gave negative ratings for community building and a supportive environment, they nevertheless still found the course exciting, especially the formal learners (formal learners: six of the seven - 86%; informal learners: four of the six - 67%).

Attention will now be devoted to what learners liked and disliked about the course.

Learners' likes

Both groups of learners had clear likes, as evidenced by the quotes:

- The innovative and creative tasks:
I liked the creative tasks, because you can do almost anything with them.
- Exploring other learners' creativity and their advanced technological skills:
I have liked the amazing, incredible creativity of my fellow students.
- The support learners give each other:
It is really awesome seeing other learners help each other with their problems so willingly and quickly.
- The uniqueness of the medium:
I have enjoyed the uniqueness of the medium.
- The discussions:
I've liked the correspondence, although I was only lurking and the way in which the medium has allowed personalities to reveal themselves and express emotion, although most of this has been from the ones with very advanced technological skills.

Learners' dislikes

Learners experienced certain dislikes, which are elaborated on below.

- Five of the seven formal learners experienced difficulty in complying with deadlines. As a result, some learners took lengthy periods to post their work, because for many it was an add-on to a large number of other commitments. Some of these learners completed their tasks months later.
- One of the informal learners found the "slow pace of the course very frustrating", while another learner in the same group found the course "a bit fast for a working person". One of the formal learners and two of the informal learners, commented that they felt the course was rushed, and suggested that the instructor should give learners more time to do the fun tasks.

- In both groups of learners, two learners were radically affected by the conflict that took place on the discussion list. This is evident in the following quote from one of the informal learners.

I do think that two of us dominated the course in a way that was not constructive. I would have liked a more supportive environment, which I think was curtailed by “X’s” aggressive stance, even after the project on flames. I’m not sure what one can do about this, and it is bound to happen from time to time – so even this was a learning experience for me. I do know that sometimes X’s barbs hit home, and it was difficult, even later on, not to rise to the bait (although I am now aware that it was bait). However, if “X” could denigrate my computer knowledge, others who had less skill must have felt totally isolated.

Two other informal learners also commented that they felt other learners might have experienced isolation or intimidation. This, however, was not the case, as only one of the formal learners on the course felt this way.

- One formal learner, and two informal learners respectively, commented that they did not enjoy or benefit from the discussion list. This is evident in the following quotes:

I did not really benefit from the listserv. It seemed to be more of a waste of time than anything. I suppose it would work better with different people conversing. Participants only seemed to respond to things that either got them really angry or if they were interested enough to respond (formal learner).

There was irrelevant bickering and chat on the listserv (informal learner).

- One learner was frustrated by the high drop-out rate, as evident in the following quote:

The pathetic co-students who dropped out like flies. What did they expect – to be spoonfed.

The overall attrition rate among the informal learners (excluding the observers, guests and learners from Rhodes University) was 75%. The main reasons learners gave for discontinuing the course were busy time schedules, technological problems, inadequate Internet skills and expectations not met. However, some of the learners who dropped out of the course, remained in the background, and “lurked”. Further research is necessary regarding the extent to which learners do or do not benefit from lurking.

- Learners would have appreciated more feedback, especially the learners doing the course formally.
- One of the formal learners, and two of the informal learners, would have liked clearer instructions. The instructor, however, deliberately gave tasks that were somewhat vague so that learners could take ownership of their tasks and use their own initiative. Nevertheless, some learners found this disturbing.

Six of the seven learners (86%) in the group of formal learners responded that the course met their expectations. However, three of the six informal learners (50%) found it did not meet their expectations, giving the following reasons:

- Learner 1 was frustrated with the slow pace of the course, due to those who could not keep up with the others. The learner did not enjoy the medium used in the course, as evident in the following quote: “I like low-tech high-person learning experiences”.
- Learner 2 already knew everything, having already designed many of his own web sites. As a result he was not motivated, nor challenged by the course.
- Learner 3 would have liked more direct information and experiences on teaching via the Web, rather than the indirect way of just experiencing it. She would also have liked the pre-requisite knowledge and competence for the course to have been more clearly spelled out, as in her experience, the course required more than a reasonable proficiency and passing familiarity with the Web.

Learners' expectations of the course correspond with that of Chyung's (1999) possible reasons why adult learners drop out of a distance learning course. Learners 2 and 3 did in fact drop-out - learner 2 because he did not perceive the instruction as interesting or relevant to his goal, while learner 3 dropped out because she was not confident about the learning processes. While learner 1 completed the course, he was not entirely satisfied with the instructional processes (see Section 5.3).

5.7.3 Communicative aspects

This section examines the effectiveness of the design of the web-based material, the features that characterised the human-human interaction, and the extent to which collaborative learning was effectively stimulated on the Internet.

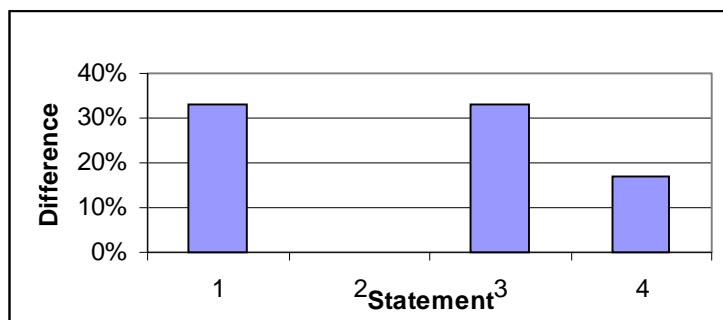
5.7.3.1 How effective was the design of the web-based material in facilitating learning?

Table 5.7 and Figure 5.8 illustrate the differences and similarities in learners' rating of the effectiveness of the design of the web-based classroom.

Table 5.7 Instructional/content interactivity

Statement		Group	Agree	Disagree	Δ
1.	The site layout and page layout was effective.	Formal learners	100% (7)	0% (0)	33%
		Informal learners	67% (4)	33% (2)	
2.	The design of the classroom motivated me to explore the site.	Formal learners	100% (7)	0% (0)	33%
		Informal learners	67% (4)	33% (2)	
3.	I could find my way around the site.	Formal learners	100% (7)	0% (0)	0%
		Informal learners	100% (6)	0% (0)	
4.	The page containing the course's objectives and expected outcomes was helpful.	Formal learners	100% (7)	0% (0)	17%
		Informal learners	83% (5)	17% (1)	

Figure 5.8 Areas of difference between the two groups, with regard to instructional/content interactivity



The informal learners were generally more critical regarding the design of the material than the formal learners, who all gave the highest rating (100%) in each of the statements, as is evident in Table 5.7. This could be a result of their exposure to sites that have been well designed, as well as their high skill level when they entered the course. Among the informal

learners, five of the six (83%) learners who completed the end-of-course questionnaire had already been exposed to the Internet and Web in teaching.

The web-based material was very successful in helping learners navigate around the site, and giving learners sufficient course information, as is evident in statements 3 and 4. In the open-ended questions, three formal learners commented that the web-based classroom was functional, one commented that the idea was good and one learner experienced it as user-friendly.

Among the informal learners, two learners found the design visually stimulating, as evidenced by the following quote:

The metaphor is effective. I also quite like the idea of the “unprofessional” design in the sense that graphic artists were not used to develop a slick image. This made it comfortable for learners to experiment.

However, two learners in this group did not appreciate the design, with one learner commenting “the simulation of an actual classroom, though cute (ugly but nice), is probably not the most effective design”. In both groups, learners commented that it took too long to download due to the large animations, as is evident in Figure 5.1.

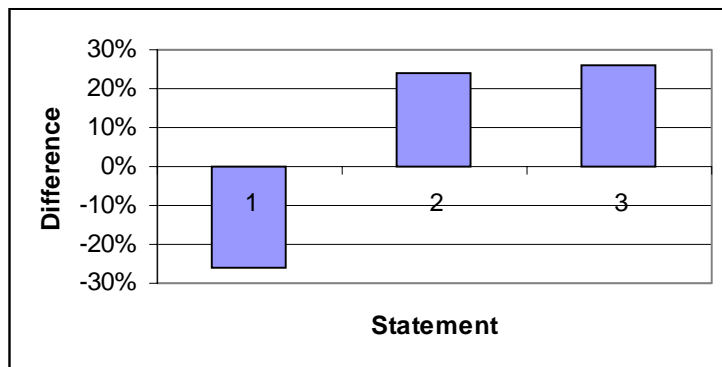
5.7.3.2 What features characterised the human-human interaction?

Table 5.8 and Figure 5.9 depict the differences and similarities in learners' response to four statements surrounding the social interactivity/human-human interaction in the course.

Table 5.8 Social interactivity

Statement		Group	Agree	Disagree	Δ
1.	The course, without face-to-face interaction and contact time, provided adequate and effective communication amongst the learners and our instructor.	Formal learners	57% (4)	43% (3)	-26%
		Informal learners	83% (5)	17% (1)	
2.	I would have preferred some face-to-face interaction, rather than just the discussion list and bulletin board.	Formal learners	57% (4)	43% (3)	24%
		Informal learners	33% (2)	67% (4)	
3.	I benefited from the electronic communication.	Formal learners	86% (6)	14% (1)	26%
		Informal learners	60% (3)	40% (2)	

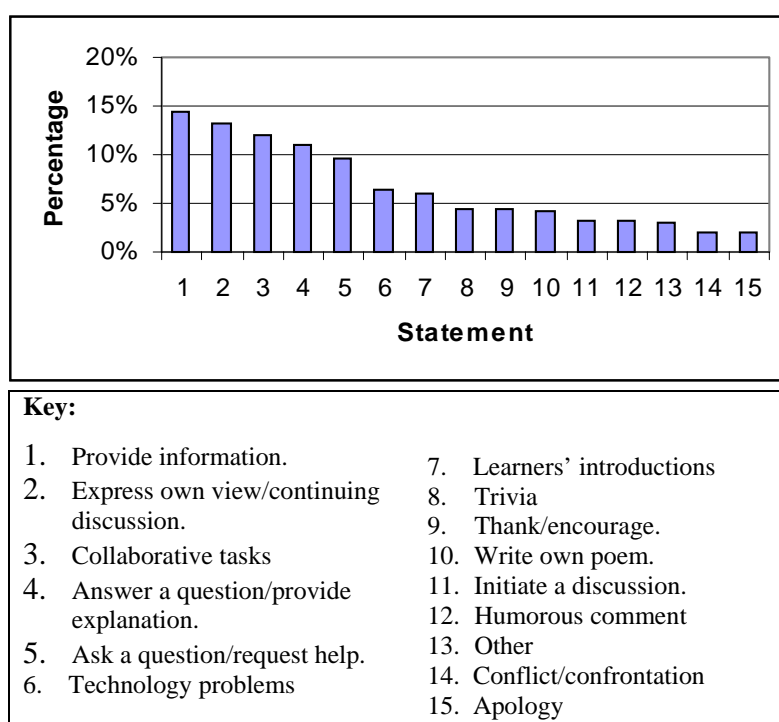
Figure 5.9 Areas of difference between the two groups, with regard to social interactivity



The informal learners were highly positive that the course provided adequate and effective communication amongst themselves and their instructor, in that five of the six learners agreed to this statement (83%). By contrast, only four of the seven formal learners (57%) agreed. This difference in response could be due to the fact that 57% of the formal learners (four of the seven) would have preferred some face-to-face interaction, rather than just the discussion list and bulletin board. The majority of the informal learners, however, were content with just the discussion list (four of the six - 67%).

Both groups of learners agreed with the statement that they benefited from the electronic communication, especially the formal learners (formal learners: six of the seven - 86%; informal learners: three of the five - 60%). This could be due to the valuable input of the informal learners into the discussion – in fact, 56% of all the messages sent to the discussion list and the bulletin board were from these learners (i.e. the guests, observers and outsiders combined). Many of these individuals (some more dominant than others) shared valuable insights and provided relevant information which they thought might be of interest to other learners. Figure 5.10 classifies all the messages sent to the discussion list and bulletin board, giving an indication of the influence had by these informal learners.

Figure 5.10 Classification of learners' communication



The highest number of messages were from learners' *providing information* they felt was useful, and which they wanted to share with the rest of the group, as well as learners *expressing their own views/continuing a discussion*. These individuals, as well as some of the others on the course, also offered valuable help to those who asked a question/requested help. This confirms King's (1995) third symptom of regression, namely the extraordinary generosity one sees on the Internet (see Chapter 2, Section 2.2.2).

A high percentage of messages were also based on communication relating to the *collaborative tasks, answering questions/providing explanation, asking questions/requesting help, and technology problems*. There were also messages based on conflict/confrontation, which had a drastic effect on some learners' impressions of the course, as has already been outlined in Section 5.7.2. A total of 481 messages were sent: 376 to the discussion list, and 105 posted to the bulletin board.

General impressions of the communication will now be given:

- Overall, learners found the bulletin board effective in the way the instructor used it. The following comment by one of formal learners indicates this:

The bulletin board provided insight and was useful in the sense that the messages were retained, they could all be seen at once, and it was easy to make comments or follow-up comments.

However, two of the formal learners did not like the fact that if they did not check it regularly, they would fall behind, which they found demotivating. One of these same learners also found it frustrating having to access it via the classroom, unlike the discussion list, where the message appears on one's screen immediately.

- The discussion list was effective in providing adequate and effective communication among the learners and between learners and the instructor, as the following comments suggest:

Feeling free to learn from others definitely made me learn more and enjoy the process.

It was wonderful to acquire new skills with other students. I really appreciated the collaborative aspect.

- There was no inhibition from some learners. One of the formal learners liked the fact that they could speak their minds freely, as the following comment suggests:

The most enjoyable was naturally the opinions of the experts who participated freely on the discussion list. Although my participation was minimal, I learnt a great deal, for example, that you can freely put your point of view across, even if others don't agree with you.

However, this was even to a fault, in that the communication of one particular outsider evidenced an aggressive stance, which negatively affected the self-esteem of some learners.

- By posting their questions on the discussion list, learners observed that others were experiencing the same problems. At times, classmates responded sooner than the instructor – possibly with a better solution, and he therefore had no need to intervene. However, not all learners enjoyed their interaction, or benefited from it, as depicted in Table 5.9, and as the following comments indicate:

I feel that the outsiders got more attention and were more opinionated than the serious students. There were certain conversations that were completely out of place in a course like RBO (formal learner).

There was too much unproductive, non-relevant bickering (informal learner).

Table 5.9 Learners' experience of interaction

Statement	Group	A qualified positive attitude: useful, but at times frustrating	Negative attitude: Frustrating/ irrelevant	Δ
How did you experience interaction with your classmates?	Formal learners	67% (4)	33% (2)	27%
	Informal learners	40% (2)	60% (3)	

Despite the fact some learners perceived communication as frustrating/irrelevant, six of the seven formal learners (86%), and three of the five informal learners (60%) still benefited from the electronic communication, as is evident in Table 5.8.

5.7.4 Technological aspects

In this section the technological aspects that were encountered in the course will be discussed.

5.7.4.1 What technological problems are encountered in a fully online course?

Table 5.10 indicates the problems learners experienced. Some of these problems were minor, while others were major.

Table 5.10 Technological aspects

Statement	Group	Yes	No	Δ
Did you experience problems with the following:				
1. Computer use	Formal learners	29% (2)	71% (5)	12%
	Informal learners	17% (1)	83% (5)	
2. Software	Formal learners	29% (2)	71% (5)	12%
	Informal learners	17% (1)	83% (5)	
3. Internet connection	Formal learners	43% (3)	57% (4)	-7%
	Informal learners	50% (3)	50% (3)	
4. E-mail communication with the instructor/class members?	Formal learners	14% (1)	86% (6)	-19%
	Informal learners	33% (2)	67% (4)	

Minor problems

The technological problems that were encountered in both groups were very similar. Learners experienced problems with their own computers and hardware/software, as well as e-mail communication problems.

Major problems

Major technological problems were problems surrounding the Internet connection. These occurred when learners accessed the Internet connection of their own server, as well as in accessing the campus's servers, in this case the University of Pretoria server and the Hagar server. These problems were experienced among both groups of learners (formal learners: three of seven - 43%; informal learners: three of six - 50%). On occasion, learners could not access the classroom or the bulletin board, because these servers were down. As a result, some learners experienced problems when trying to FTP their work to the server, to meet the deadline. This problem was heightened when learners, primarily from academic institutions, experienced problems with their own servers as well. The access problems arose because at the time of the 1999 *RBO* course, the UP network was being upgraded, and on other occasions, maintained. A large number of messages on the discussion list also pertained to technological problems (6.5%).

The following quote from the instructor indicates the severity of the problem:

When I designed this module I had no idea we would be so seriously handicapped by technology. The network infrastructure has driven me to tears.

Table 5.10 indicates that there were no stark differences in the technology problems, as experienced by the two groups of learners, and problems related to Internet connection are ones that are typically experienced in Internet-based learning. Nevertheless, to ensure effective use of the Internet, this problem must be overcome.

5.8 Summary

The responses of both groups of learners to the various aspects under investigation in this study, namely: andragogical, affective/emotional, communicative and technological aspects, were generally similar. The formal learners were generally more positive than the informal learners. This could be as a result of the diversity of the backgrounds of the informal learners. These learners did not know each other up-front, and were not familiar with each other's mannerisms. Nevertheless, both groups of learners, formal and informal alike, benefited from the course.

Both groups of learners agreed that the environment was not supportive in the sense that it did not facilitate community building. It was interesting to note that the conflict had a greater emotional effect on the informal learners. However, despite the negative emotions experienced by some learners, the learners who remained in the course learnt a great deal about group processes in the online environment and developed a sophisticated understanding of the interactive potentials, pitfalls and issues faced in online collaboration.

The main differences between the two groups lay in their response to the following:

- The course did not meet the expectations of half of the informal learners.
- The informal learners did not mind the lack of feedback.
- The majority of the informal learners did not experience overload/anxiety (67%), while 71% of the formal learners did experience overload/anxiety.
- Eighty-three per cent of the informal learners did not experience a sense of community building.
- The informal learners were more critical about the design of the web-based classroom.

Certain challenges arise from the study, namely:

- To maintain a sense of group identity throughout the course.
- To manage diversity among different kinds of learners.
- To keep interaction on discussion lists useful, preventing learners from feeling frustrated by the communication on the discussion list.
- To keep discussion lists running, and not dying out after the course is over.

This study has helped to identify some of the similarities and differences between two groups of adult learners, formal and informal alike, specifically looking at their responses, reaction and experience of a web-based classroom. It is hoped that this research will expand instructors' abilities to effectively educate and train via the Internet, so as to attain greater success in future web-based classrooms.

The conclusions and recommendations arising from this study should be applied with caution, seeing that a small sample size was used.

5.9 Recommendations

Recommendations are given for each of the different aspects under investigation in this study.

Andragogical aspects

- Monitor learners carefully, and give feedback regularly.
- Include many subdeadlines and place pressure on learners to abide by them.
- Ask learners to report on their progress or attempts/successes/failures in the tasks given them, on a weekly basis. This may keep discussions more constructive, making the instructor more aware of where learners could be experiencing problems, and learners may find that they share the same difficulties.

Affective/emotional aspects

- Strive to integrate the class at the outset of the course, through brief collaborative tasks. This would help learners get to know each other, and keep them from feeling isolated from the rest of the group.
- Encourage learners to post introductions along with their fears and expectations for the course, at the outset of the course, or, when possible, create a homepage that other learners in the group can visit.

Communicative aspects

- Design learning material in such a way that it is cognitively comprehensible, that is, consistent and predictable. This would meet the needs and requirements of informal learners.
- Encourage learners to establish and agree to clear norms and guidelines at the outset of the course (Fisher *et al*, 2000) and then abide by these norms and guidelines for the duration of the course.
- Schedule inter-learner debates on controversial, but relevant topics.

Technological aspects

- Make certain that the host network and remote network are stable.