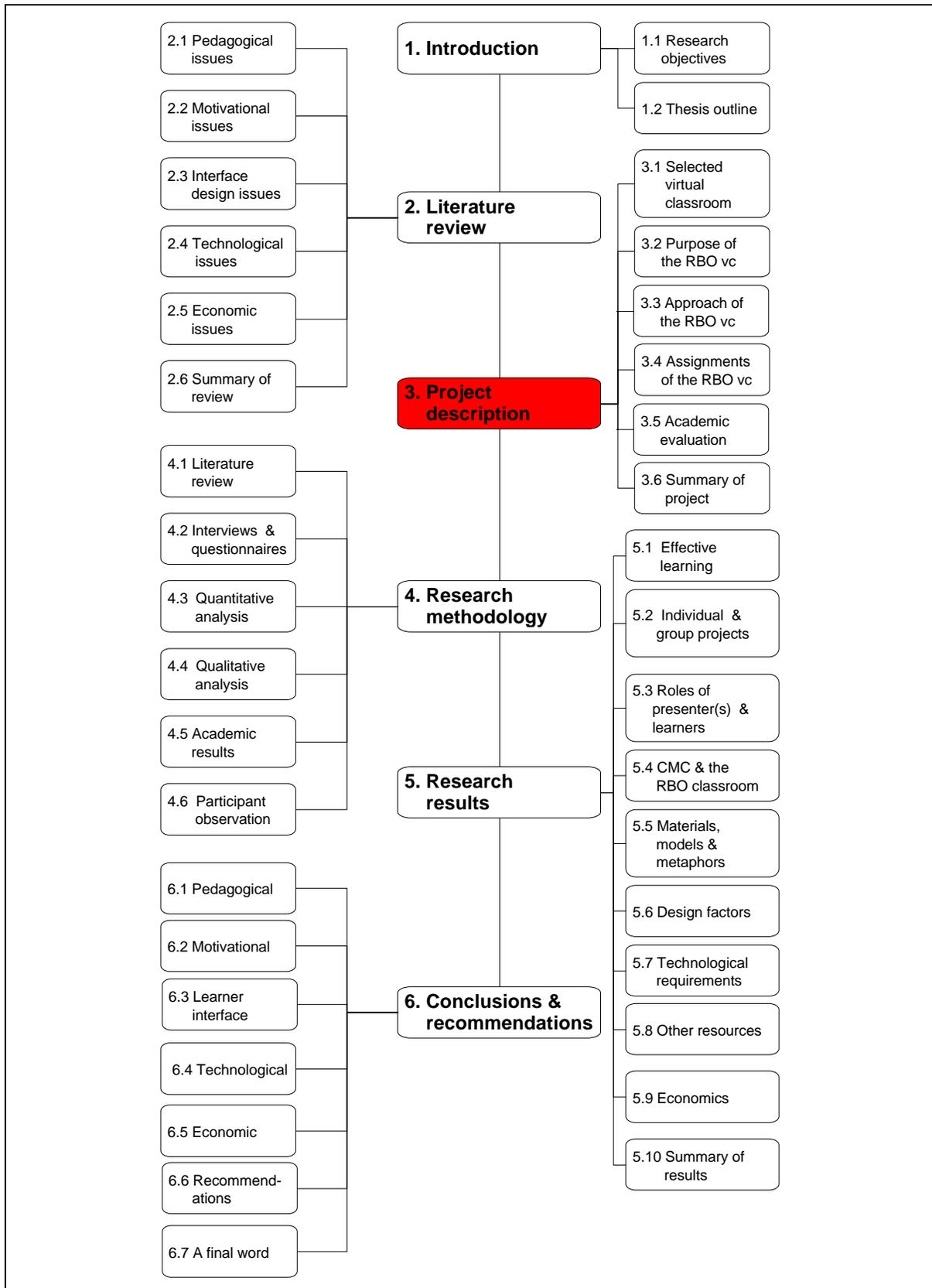
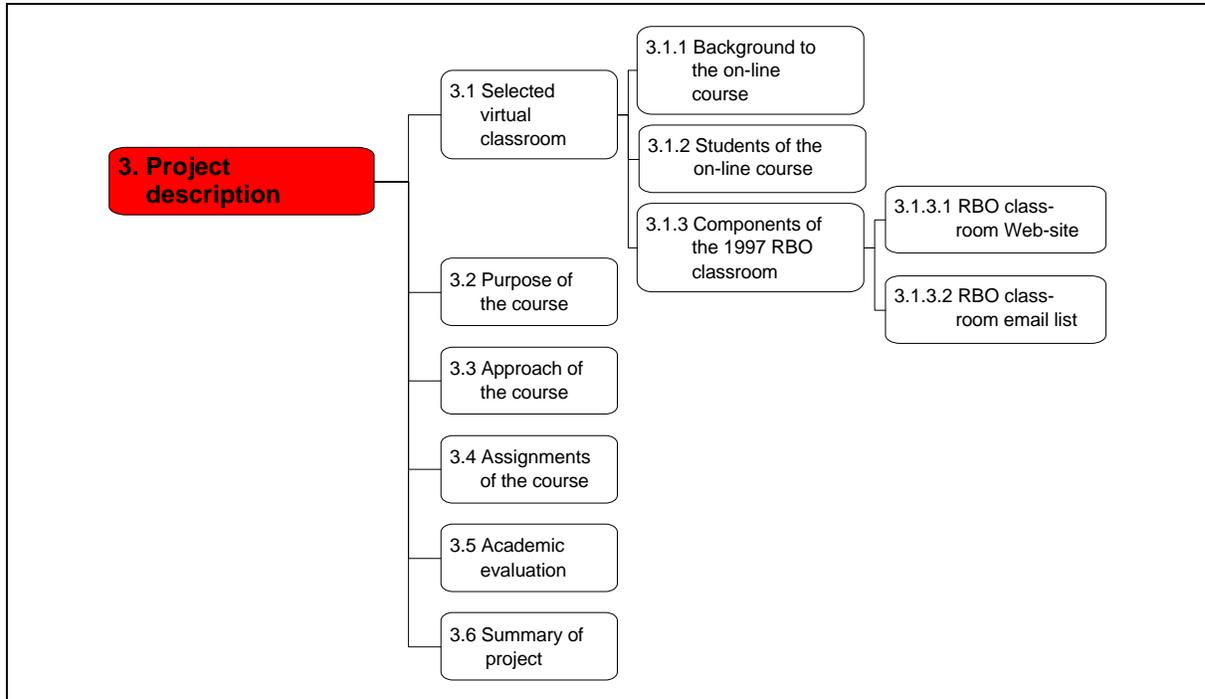


# Chapter 3

## Project description



**Figure 3.1 Outline of Chapter 3**



To assess the feasibility of delivery of effective education via the World Wide Web, a project was planned and implemented to answer the research questions in Table 1.1 (page 4). This project focused on a 'virtual classroom' constructed to exploit the reported strengths and counteract some of the reported deficits that had emerged from the literature review of Web-based learning.

### **3.1 The selected 'virtual classroom'**

The 'virtual classroom' selected for investigation and evaluation was the basis for the 1997 RBO 880 course. 'RBO 880' is the university computer code for the module *Computer-assisted education via the Internet*. This elective module is studied in the second year of the part-time two-year Master of Education (M. Ed.) degree in Computer Assisted Education (CAE) at the University of Pretoria, South Africa. In 1997 it took place in the first semester from mid January to the end of April.

To obtain comprehensive information on this module, an interview with the course presenter was conducted via email. The interview schedule (see Appendix A) included questions on a variety of aspects of the course/classroom, including those that are listed below and which will be described in this chapter:

- background to the on-line course,

- ❑ students of the on-line course,
- ❑ description of the 1997 RBO Virtual Classroom,
- ❑ purpose of the course,
- ❑ philosophy of the course,
- ❑ assignments for the course, and
- ❑ the course evaluation method.

### **3.1.1 Background to the on-line course**

The format of the selected course had varied each year since it was introduced in 1993. Originally a self-study literature module with no Internet connectivity, it had incorporated increasing use of email and Web access each subsequent year with some face-to-face contact time.

In 1996 and 1997 each of the other coursework modules of the coursework in the M. Ed. (CAE) programme included four to five days face-to-face contact time in Pretoria. These contact periods occurred at approximately one month to six-week intervals. This enabled students who lived in locations around the country to register for and attend the courses at the planned times.

In 1997 the RBO course was structured around the "RBO Virtual Classroom" with the following features:

- ❑ Web-based course material was provided,
- ❑ there was no face-to-face contact time,
- ❑ communication and discussion was via a dedicated listserver (email list) and individual email,
- ❑ projects were "handed in" by means of student-created web-sites and pages,
- ❑ longer term and collaborative projects were included in addition to individual ones, and
- ❑ there was an external 'observer' based in the U.K. who could monitor messages between students that were not directed through the listserver.

### **3.1.2 Students of the on-line course**

As on-line courses require learners to have Internet links, a pre-requisite for the course was that participants should already have email, Internet and Web links and be familiar with their use *before* commencement of the course. Not all students met these criteria, with one student obtaining an Internet link some time after the course had already begun. Only one student was already familiar with HTML, the markup language of Web pages.

Table 3.1 presents an overview of the characteristics of the students of the 1997 RBO course.

**Table 3.1 Description of the 16 students of the on-line course**

<b>Characteristic</b>	<b>Description</b>
<b>Gender</b>	10 women 6 men
<b>Age range</b>	From mid-twenties to mid-fifties.
<b>Student status</b>	12 registered M. Ed. Students (4 of these registered as an optional 'extra' course) 4 enrolled for non-degree purposes
<b>Employment status</b>	All in full-time employment.
<b>Residential location</b>	Variable distances from the university : one resident in Pretoria and three who lived more than 700km away.
<b>Computer literacy</b>	The M.Ed. students had completed at least one year of M.Ed. studies in computer assisted education. Non-degree purpose students worked in computer related fields.
<b>Internet literacy</b>	From none to high.
<b>Internet access</b>	Varied from relatively reliable links to unstable. Through tertiary institutions and private service providers.
<b>Previous contact</b>	Some students had worked together on projects the year before. Others had never met face-to-face.

The participating students were highly motivated adults with a few taking the course as an additional subject to the prescribed number of courses required for the M. Ed. qualification. Some students knew one another well from five modules of first year contact classes. During those visits students had built up working relationships through collaboration on a variety of co-operative and constructivist projects.

Most of the students were bilingual with respect to Afrikaans and English, as was the course presenter. Courses at the university require that students be able to understand lectures presented in Afrikaans. In this module as in others of the M. Ed. (CAE), students were permitted to communicate in either of these two languages.

For some students the costs of Internet access were borne by their employer institutions, while others bore the costs themselves.

### 3.1.3 Components of the 1997 RBO virtual classroom

*You all have keys to the classroom....  
Do NOT turn out the lights when you leave!*  
RBO course presenter

The first component of the RBO Virtual Classroom was a web site that represented the 'physical' portion of a real classroom. It presented basic course information, material and instructions. This delivery medium enabled distance students to participate without travelling to the university. The classroom web site is located at

<http://hagar.up.ac.za/rbo/classrm.html>. The Web site was initially stored on an experimental Unix-based computer server located at the University of Pretoria. Later in the course the Unix operating system was replaced with Windows NT.

As learner control over paths taken to traverse information provided by the Web tends to be a one-way process unless supplemented by some form of computer mediated communication, the second component of the RBO Virtual Classroom was a dedicated class email list. This list was intended to provide for communication, interaction and personalised feedback to enhance learning.

#### 3.1.3.1 The RBO classroom web-site

As the course was designed to be presented via the Web without face-to-face contact, the web-site included the following material to address the handling of course and learning management issues which, in more traditionally presented courses, would otherwise be clarified during face-to-face lectures or one-on-one interaction with the lecturer:

- ❑ Course welcome and description,
- ❑ course objectives
- ❑ assignment topics,
- ❑ assignment deadlines,
- ❑ group project topics and membership matrices,
- ❑ on-line resource material, including links to supplementary external resources, and
- ❑ evaluation procedures.

Appendices E to H present outlines of this material as it appeared on screen on the classroom's web pages.

The web-based classroom's graphical interface used the metaphor of a real physical classroom. This was divided into four sections. The first presented a board and notice boards

as might be found in the front of a physical classroom. Clicking on these revealed timetables and tasks similar to those that would be found on notice boards in real classrooms. Clicking on the board revealed course objectives and comprehensive on-line study guides, as suggested by Van Brakel (1996). In keeping with the metaphor, the blackboard was a graphic file which students could access and edit if they so chose. This paralleled the scribbling of graffiti on a blackboard in a physical classroom.

The second section was the administrative area containing the course presenter's desk, a resource cupboard and a link to the alumni association. The instructor's desk branched to his home page containing links to aspects of general interest. It also provided a direct email link to the course presenter. The resource cupboard contained links to subject matter and useful downloadable programs for web page construction e.g. graphic and HTML (hypertext markup language) editors. The alumni page also contained links of a general nature regarding computer-assisted education.

The third section was the poster wall with links to projects by previous students, as well as links to the on-line "posters" that would be created by the students co-operatively as the course progressed.

The last section contained the learners' 'virtual' desks. Initially the opening screen of the classroom included a graphic of an empty desk for each registered student. Each student was assigned a WWW directory that was linked to a desk. As the course progressed, each student replaced the generic picture of a desk with a personalized one, and then "filled the desk" with things typically found in a real classroom desk, namely:

- ❑ *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 M. Ed. modules)*
- ❑ *Your hobbies (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,1997).

Figure 3.2 overleaf presents a printout of part of the opening screen of the classroom as it appeared to students on the opening day of the on-line course. During the course, learners did not only find information on the classroom web site, but generated their own Web pages as part of individual and collaborative projects.

Figure 3.2 Extract from first screen of RBO Virtual Classroom – day one

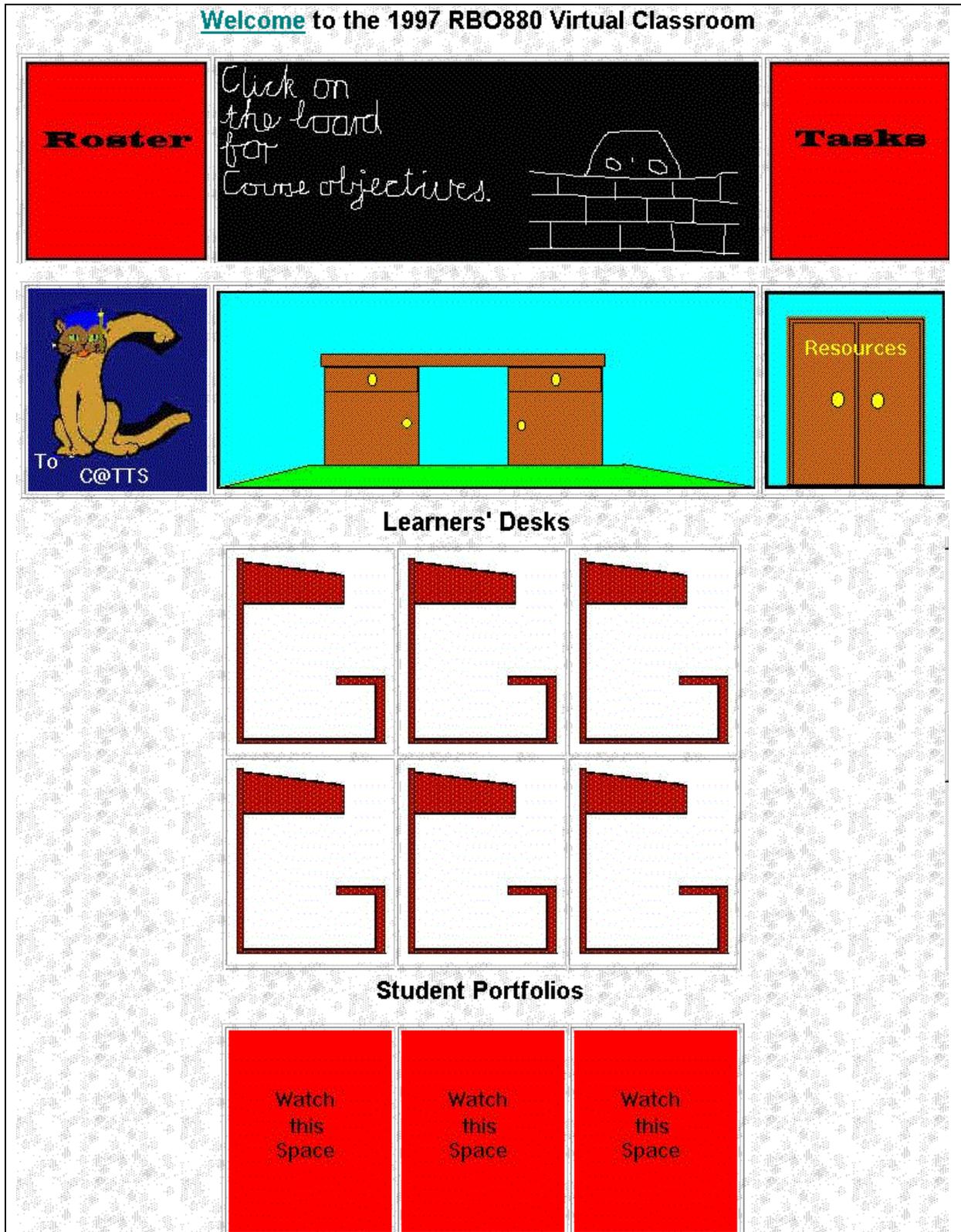
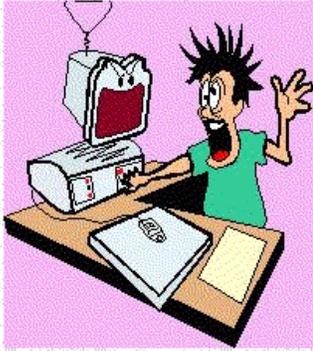
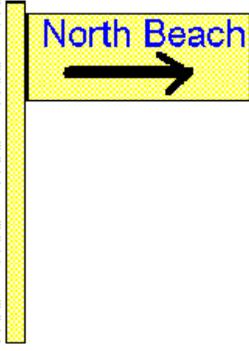
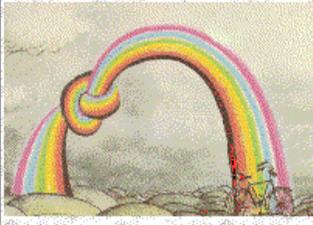
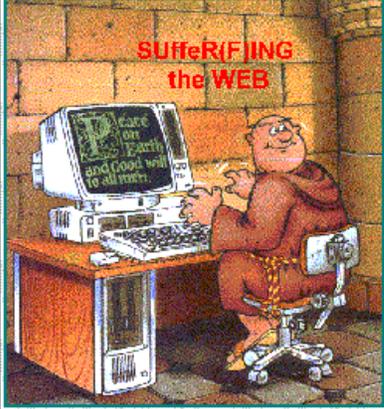
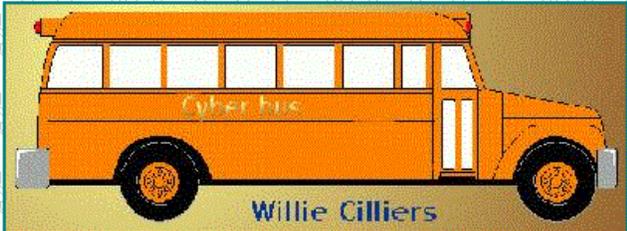


Figure 3.3 presents a printout of the screen showing links to the students' 'virtual' desktops as it appeared on the final day of the course.

**Figure 3.3 Screen of links to learners' desks – final day of course**

Learners' Desks		
 <p><a href="#">Dolf Steyn</a></p>	 <p><a href="#">Mari Peté</a></p>	 <p><a href="#">Patsy Clarke</a></p>
 <p><a href="#">Karen Lazenby</a></p>	 <p><a href="#">Ari Naidoo</a></p>	 <p><a href="#">Johan Viljoen's</a> <b>VIRTUAL REALITY</b></p>
 <p><a href="#">Duckie de Jager</a></p>	 <p><a href="#">Christinah Mokoka</a></p>	 <p><a href="#">Willie Cilliers</a></p>
		

The poster wall also grew as course participants added their group projects to the poster page. Figure 3.4 displays the expanded poster wall as it appeared at the end of the course with the additional posters that linked to complete group projects. This figure also show the graffiti covered board as it appeared on the last day of the course.

**Figure 3.4 Opening screen of classroom and poster wall – final day of course**

Welcome to the 1997 RBO880 Virtual Classroom

<b>Roster</b>		<b>Tasks</b>
---------------	--	--------------

**The Poster Wall**

<p style="text-align: center;"><a href="#">The Kwa Zulu Concept Burger of Software Evaluation</a></p>	<p style="text-align: center;">Nunus <a href="#">Networked Learning</a></p>
<p style="text-align: center;"><a href="#">Debbie Adendorff's</a> amazing pages on <a href="#">Menus and Icons</a>. A guest appearance</p>	<p style="text-align: center;">A Taxonomy of Web-Based Learning</p>
<p style="text-align: center;"><a href="#">Social Issues and The WWW</a></p>	<p style="text-align: center;"><a href="#">Who's Who in IT</a></p>

### **3.1.3.2 The RBO classroom email list**

The dedicated RBO email list was set up specifically to facilitate interaction and communication among participants of the course. Electronic mail lists usually facilitate communication for groups of people with common interests or goals. Such lists are 'subscribed' to, and may be 'unsubscribed' from when a user is no longer required to belong to the list.

The purpose of the software that runs such a list is to copy all email messages sent to the list's address and to deliver them to the email addresses of everyone currently subscribed to the list. Messages remain available in the email folders of all individual members of the mailing group from the time they are posted until they are opened at a time convenient to each recipient. Thereafter they can be saved, filed or deleted as required.

The classroom email list was set up on an official university server. Students who enrolled for the course received an initial email message of welcome from the course presenter with instructions on what to do next. Included was the address of the Web-based classroom and how to subscribe to the email list. This message is presented in Appendix I.

The default for replies to messages received via the list was set to reply to all those subscribed to the list. In order to reply to individuals, senders of messages had to deliberately change the default address. The default mode resulted in the generation of considerable communication, including a few messages not intended for the entire list. Most of the interaction that took place during the M. Ed. RBO course occurred via the email list, the rest being in the form of email to individuals.

During a twenty-week period from mid-January until the end of May, a few weeks after the course was intended to finish, the RBO mail list received 354 messages. In addition participants were able to email one another privately and to mail the course presenter directly. The course presenter received a further 108 course related messages, 76 of which were from students. The presenter requested that the non-list mail, referred to during the course as 'corridor whispers', also be forwarded to the course observer in the U.K. It was intended that monitoring and analysis of the 'corridor whispers' would contribute to information concerning the motivation and collaboration among students. Only six of the students and the course presenter complied with this request with respect to sixty-six messages in total.

### **3.2 Purpose of the RBO Virtual Classroom**

The general objectives of the RBO course were to enable students to learn about use of Internet and the Web in education, and to sharpen their Internet literacy.

The RBO Virtual Classroom was also intended to solve a number of problems that occurred with previous RBO courses:

- ❑ it facilitated delivery of material across a distance, including graphics and tables;
- ❑ it accommodated distance students who could not afford a further trip to Pretoria;
- ❑ it provided opportunities for longer term projects unconstrained by contact time of limited duration as had occurred in an earlier course; and
- ❑ it provided a platform for the display of student projects as well as course material.

The RBO Virtual Classroom was set up by the course leader to facilitate the following specific objectives for learners:

- ❑ to learn electronic distance education electronically at a distance,
- ❑ to work co-operatively over a distance, and
- ❑ to discover the relationship between making constructivist connections and the "hyperlink" nature of the Web environment.

### **3.3 Approach of the RBO Virtual Classroom**

The philosophy of the RBO on-line course was constructivist and collaborative. Constructivism is the learning theory which posits that knowledge is actively built by learners, as opposed to instructivism which holds that knowledge is delivered by an instructor who expects learners to receive and repeat that knowledge (Papert, 1990; cited in Jonnasen, 1996).

The RBO Virtual Classroom was the means through which students would actively learn via the Internet and the Web and in the process, experience the strengths and pitfalls of teaching, learning and collaborating via the Internet and the Web.

To this end, in addition to assignment objectives, deadlines and links to useful resources, the course facilitator used the Web-based classroom to facilitate student access to relevant, useful learning material. The range of learning scenarios was extended as follows:

- To provide access to lectures and tutorials that would enhance students' progress through the initial learning curve with respect to the Internet and the Web, students were required to enroll for a free on-line course RoadMap96 (Crispen, 1996). Delivered by one-way email, this course provided learning material on the basics of the Internet and the Web and how to use them.
- To provide opportunities for consultation with a wide range of experts, students were also required to subscribe to ITForum, an international, ongoing email list that facilitates email discussion around regular on-line conference papers by professionals in instructional technology. This list provided the opportunity for students to participate directly in discussions or learn from them by 'lurking' - reading and following the discussions without sending messages themselves. Between conferences it was possible to ask questions and receive diverse answers from list participants, including internationally renowned professionals in the field.
- The opportunity for group activity and experience of learning partnerships was provided by the collaborative group projects and by collaborative discussions on the class email list. These are described in the sections which follow.

### 3.4 Assignments of the RBO on-line course

To achieve course objectives students were required to complete a number of assignments and make them available on the Web and the class email list. In the process they would improve their Web and email skills as well as learn how to learn via the Internet and the Web.

The objective of **Assignment 1** was for each student to mail to the email list a submission entitled "Who Am I?". More than a formal introduction, it also required each student to explain why they were enrolled for the course, outline their current support structures and present some line art. As well as providing useful information for learners to get to know more about one another, it provided information on what motivated them to take the class. In addition it acted as an ice-breaker exercise and provided each student with the opportunity to present familiar material while they tried out the email list conventions and procedures.

The goal for **Assignment 2** was for each student to design and develop a personal 'virtual' desktop to be attached to the classroom web-site. Thereafter they were to continue to fill it with resources and information that would meet the assignment objectives concerning aspects

of learning via the Internet and the Web. In the process of implementing this assignment the students learnt to use HTML and applied what they were learning about Web page design. The content of these virtual desktops was developed throughout the duration of the course until the evaluation date. Figure 3.5 presents a printout of the opening screen of a completed virtual desktop.

**Figure 3.5** Opening screen of a student's completed virtual desktop



For **Assignment 3** the learners were allocated to groups, given group roles and a topic. Roles included designing a web site, authoring it and 'surfing' the Web for information to meet the topic. Co-operative assignments were structured to meet the following prerequisites for effective co-operative learning (Johnson and Johnson, 1991):

- ❑ a mutual goal,
- ❑ positive interdependence, and
- ❑ individual accountability.

Figure 3.6 presents a printout of the opening screen of a completed group project on the topic *The Sociological Impact of the Web*.

**Figure 3.6 Opening screen of a completed group project**



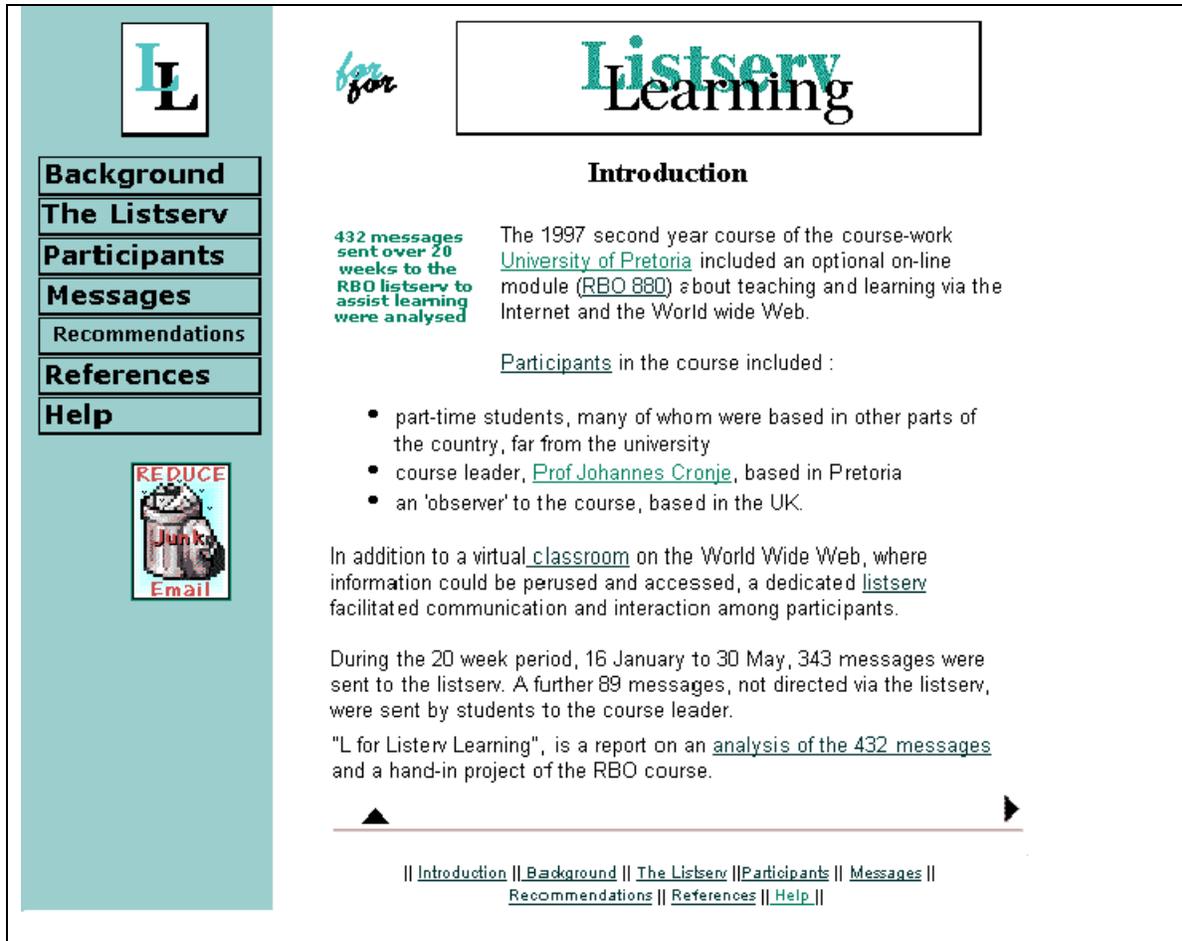
For **Assignment 4** individuals presented proposals for a two month sustainable examination project of their own choosing. After discussion and evaluative feedback from the class and course leader, students implemented their projects and made them available on the classroom Web page. Figure 3.7 presents the opening screen of a completed examination project on the role of email in the on-line course.

### 3.5 Academic evaluation of course

Some of the criteria for the academic evaluation of the course were presented and negotiated with students during the course. Both content and design were assessed for the Web-based assignment products. Students were also given credit for their contributions to the email list

and for contributing useful Web sites via email. The two-month sustainable projects were given marks for concept, execution and reporting.

**Figure 3.7 Opening screen of a submitted examination project**



### 3.6 Summary of project

The project focused on a course for geographically dispersed adult students. Components of the course included:

- ❑ a Web-based classroom of information, instructions, links and related material;
- ❑ messages to a dedicated email list for feedback, interaction and communication; and
- ❑ constructivist and collaborative assignments that contributed to the ongoing construction of the classroom.

Aspects of the above-mentioned components of the RBO Virtual Classroom were monitored, evaluated and analysed in order to answer the research questions in Table 1.1 (page 4). Information on the methods and procedures used for this analysis is provided in Chapter 4.