

Chapter 6

Conclusions and recommendations

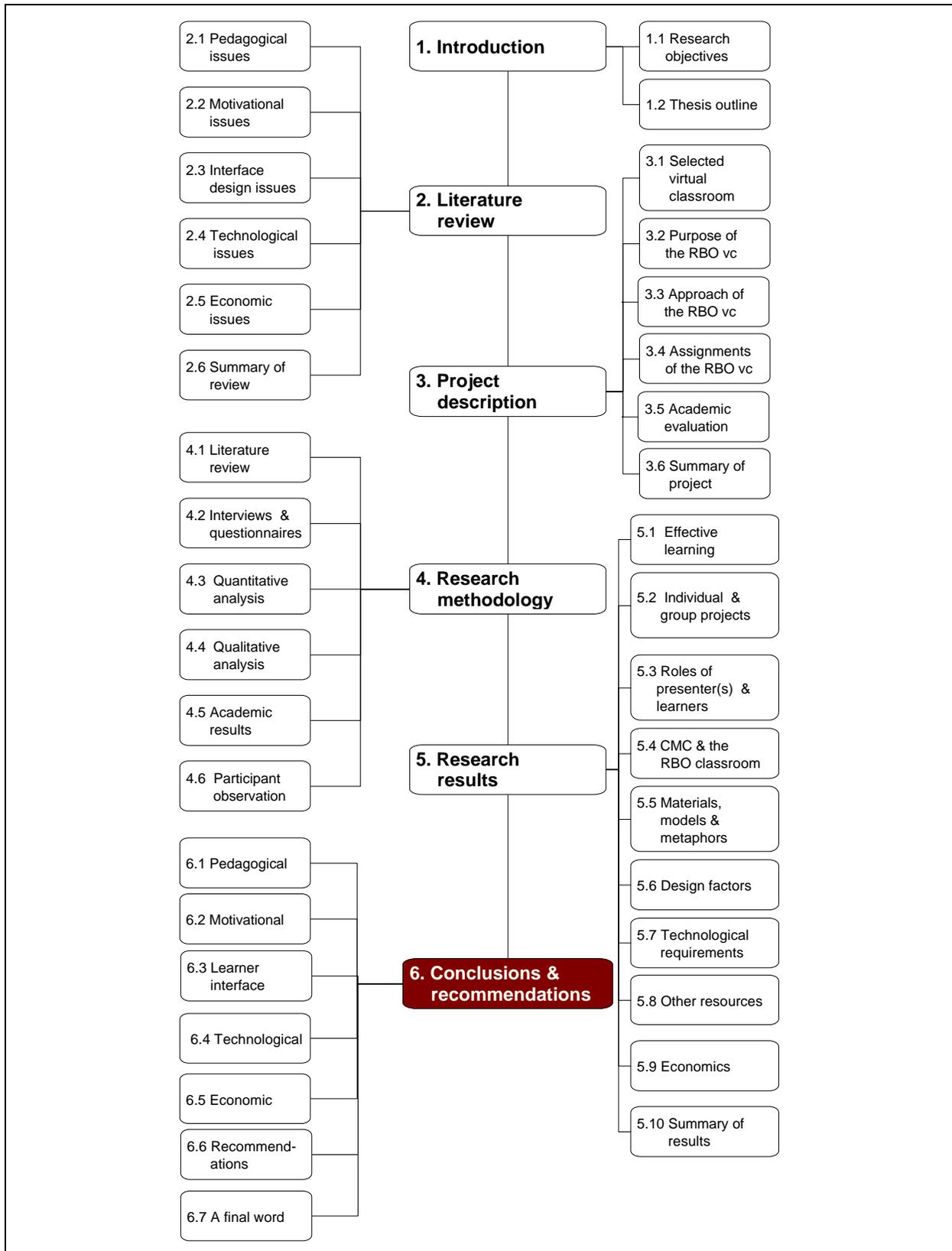
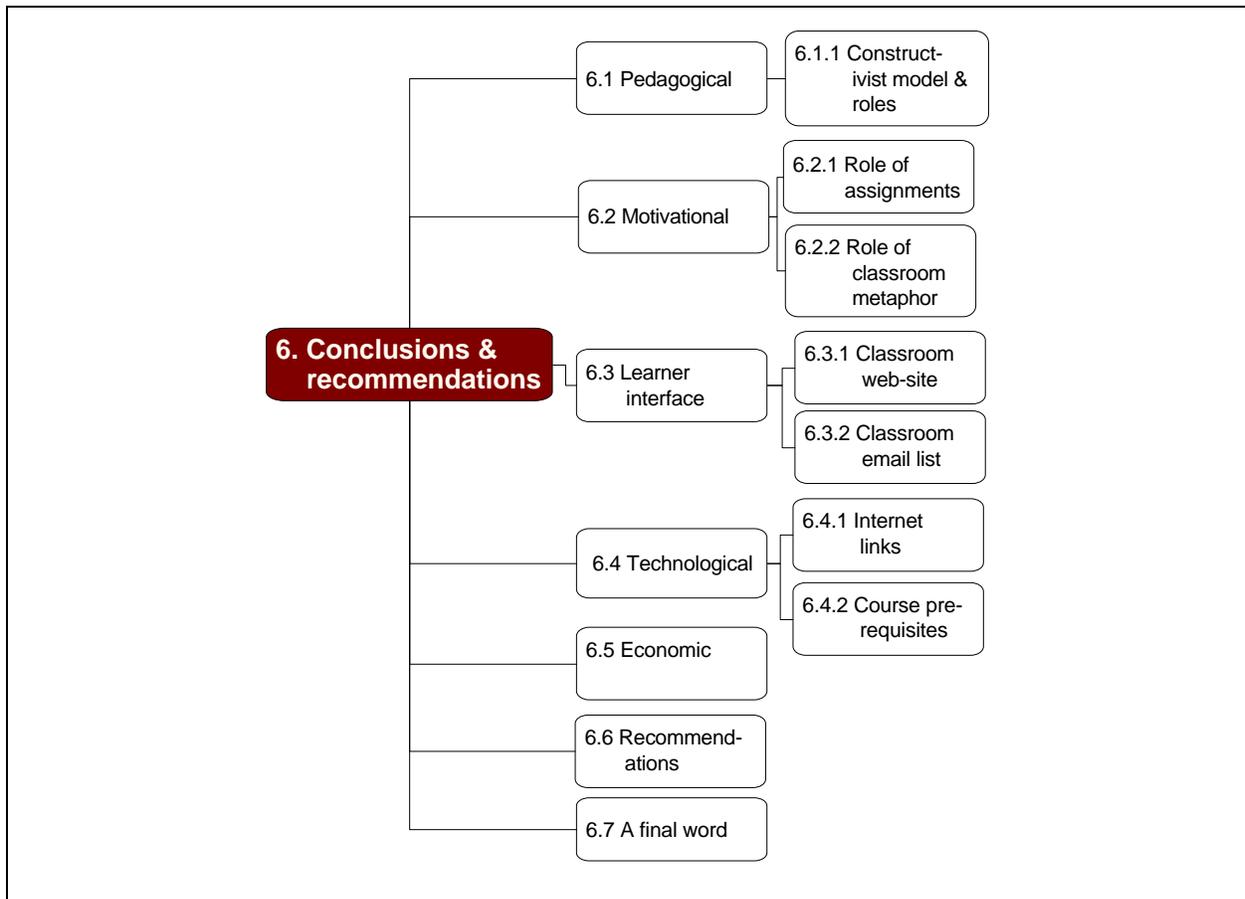


Figure 6.1 Outline of Chapter 6



This dissertation examined the feasibility of telematic teaching of adults. The investigation covered the following aspects of a Web-based on-line course:

- ❑ pedagogical,
- ❑ motivational,
- ❑ learner interface,
- ❑ technological, and
- ❑ economic.

The research results in Chapter 5 indicate that the Web-based RBO on-line classroom enhanced with the dedicated email list facilitated an effective constructivist learning environment that mimicked many of the features of a physical classroom *and* improved on some of them. These delivery methods were convenient for distance learners and provided opportunities for working students to study according to their own schedules. In addition they provided an economically viable option for students who otherwise have the expense of travel and accommodation during face-to-face courses.

This chapter focuses on conclusions around the key features that contributed to the success of the RBO 'virtual classroom', as well as some limitations experienced with the classroom methodology. Thereafter recommendations are proposed based on these reported strengths and limitations.

6.1 Key pedagogical factors in the RBO on-line course

6.1.1 Constructivist model and participant roles

Successful educational experiences and environments may be facilitated by the choice of media and distribution method. However, the determining factor for success is how the media and methods are used (Cronjé, 1995). A key feature that underpinned every aspect of the RBO virtual classroom was the constructivist model provided by the course presenter in the design and implementation of the on-line course. In this model the students were not the objects of learning who were merely expected to comply with pre-determined goals controlled by the course presenter. Rather the course presenter encouraged them to initiate their own solutions on how to meet goals. His support and encouragement gave them confidence to try new methods and initiate their own ideas on how to proceed. Since the course presenter viewed the resulting processes as part of his own learning task, he practised considerable flexibility concerning the course details and deadlines as it progressed.

By choosing not to provide lectures himself, the course presenter focused on the *processes* of learning. He did this by concentrating on monitoring and responding appropriately to the interactive processes that occurred through the email messages. The course presenter's guidance, encouragement and judgment, coupled with his ability to become almost invisible at times, provided a useful model for students who were able to take on similar roles to his in facilitating one another's learning. This regular peer support and communication helped to inform students in defining the scope of their individual and collaborative projects.

The flexibility of the design enabled students to decide how to meet course goals, provided they learnt to use the pre-requisite tools. This afforded students increased control, freedom and responsibility but also required some intervention from the course presenter as some students overestimated what could be achieved in the available time frame.

As "distance is dark" (Cronjé and Clarke, 1998), the course presenter could not know when and if students were working or coping unless they communicated regularly to the email list or

with him. When students stopped sending email and then decided to leave the course without notice, it put pressure on remaining group project members who were usually waiting for replies from them. The group was then left with a workload that assumed equal contribution by the original members and a deadline that did not accommodate new members joining the group at the last minute. For this reason assignment deadlines need to be supplemented with interim deadlines and opportunities for regular progress reports.

Although there was considerable focus on the processes of learning in the course, the course evaluation focused almost exclusively on the products (assignments). To supplement this, consideration should be given to setting criteria that incorporate progress and process. In courses that promote learner independence, goal setting and self-direction, more emphasis could be placed on consultation with learners to negotiate such criteria for project excellence.

6.2 Key motivational aspects of the RBO on-line course

In addition to the constructivist design of the on-line course, key factors that contributed to high levels of motivation among learners included the nature of the assignments and the classroom metaphor itself.

6.2.1 The role of the assignments

The design of the assignments incorporated a number of key factors that are motivating to adult learners:

- they provided diversity to cater for diverse learning styles;
- they directly facilitated step-by-step learning that enabled learners to use what they had learnt at one stage to build on in the next;
- they provided considerable choice and freedom in how individuals and groups could implement learning tasks, and
- they provided the opportunity for learners to present what they had learnt and share this with one another.

The emailed '*Who am I?*' introduction required from each student provided the initial on-line interactions among course participants. Had the instruction been merely to introduce oneself they might have been restricted to a few lines on how each student earned a living, as one often hears in face-to-face workshop introduction exercises. By requiring students to reflect on and present their motivation to participate in the course and on their support structures, a thoughtful mode of communication was initiated and a considerable amount of useful information shared. Even students who knew one another from earlier face-to-face modules

remarked on how much more they learnt of fellow students from the emailed introductions. As an introduction to students who had not met face-to-face, this exercise was particularly invaluable.

The keystroke art exercise that was included in this assignment served to stimulate creativity on the part of students as well as provide early manifestations of humour that became an integral component of the class spirit. The line-art requirement had originally been intended to give the course presenter some idea of students' computer familiarity and literacy. To some extent it did this, as the contributions varied from those who presented simple designs to those who browsed and copied contributions from specialist web-sites.

In the process of designing, developing and authoring the Web-based desks, students improved their web-browsing skills, learned to use web authoring software and graphics editors and implemented a range of networking, file searching, retrieval and transfer procedures. Information to supplement and enhance these skills was provided by the RoadMap96 on-line lectures.

The students' previous exposure to the theories and practice of group work contributed to the successful elements of the group projects and helped them to meet the challenges of working collaboratively by means of asynchronous communication. The final examination project enabled students to apply their newly acquired and honed skills as well as design and implement longer-term sustainable projects.

6.2.2 The role of the classroom metaphor

The classroom metaphor provided a familiar interface that assisted learners to climb the initial learning curves within a new and challenging educational (cyber) space. In addition it facilitated a cohesive group spirit among learners, some of whom had never met face-to-face.

6.3 Key learner interface aspects of the RBO on-line course

6.3.1 The role of the classroom web-site

The initial web-site of the online classroom mimicked effective blackboards, posters and noticeboards as found in a physical classroom. As the course presenter could not see students or control when and whether they were working, he gave considerable attention to course management issues and course outlines and guides which were made available on the classroom web-site.

An enhancement over a physical classroom was the ease with which updates and additions to course administration, management information and instructions could be made immediately available to be accessed by students in their home regions.

As the students continued to add to the construction of the web-based classroom with their own web sites, the website provided an effective interface for the presentation and sharing of student work but also resulted in a useful, permanent resource base of information in the field of study. In addition, the classroom metaphor was successful in drawing students into the spirit of a real-life classroom; their contributions to its continued construction gave them a sense of ownership as they explored this new environment.

6.3.2 The role of the classroom email list

At the heart of computer networking is "human association and interaction" (Eisenberg and Ely, 1993; cited in Steven, 1994). However, had the course consisted of only the classroom web-site, human interaction would have been limited. There would have been one-way communication from the course presenter to students via the structured initial web pages, and one-way communication from students to the course presenter and one another by means of their Web-based assignment products.

The addition of the dedicated email list facilitated the 'putting up hands' and discussion that occurs in a physical classroom but with an enhancement: this was not limited to fixed classroom hours, nor were learners subjected to the turn-taking delays that can occur in synchronous discussion.

One of the key factors that contributed to the volume of email interaction was that it was set up so that by default all replies were directed to the entire list. Students simply selected "Reply" and typed in a contribution. Email lists with the default reply directed to the individual sender

require that the address be changed to that of the list. Such lists used by similar classes have resulted in a drastic reduction of the number of messages (Cronjé, 1998). They also seem to contribute to an 'uneasy silence' that students seem reluctant to break. The volume and spirit of the postings that result from email lists that by default send all replies to the list is usually worth the few embarrassing and misdirected messages that are not intended for the entire list.

As the email list sent each message to all participants, students needed to ask a lower proportion of course administration questions compared with other reported on-line courses. It seems that students often found that the reply to a fellow student's question answered their own query before they made it. This took pressure off the course presenter who in face-to-face classrooms often has to repeat information in many one-to-one encounters. It also resulted in students focusing more on course content related topics, problem solving, obtaining and providing support. The light-hearted interaction and social relations which this fostered were similar to that in physical classrooms, which help develop a class spirit that enhances the learning process.

Email communication provided the course presenter with more access and insight into student learning processes than he usually experienced in face-to-face courses. Students reported having more access to the course presenter and to other students than possible in face-to-face classes.

The constructivist approach and the facilitative role of the presenter referred to earlier ensured that the email list did not merely receive questions from students and replies from the course presenter. Every participant contributed to the interaction to a greater or lesser extent, and all contributed solutions and support as well as queries. The result was a collaborative network of communication. The usefulness of this collaboration has led to a number of students from the class continuing their email relationships to provide professional information and informal support to one another.

Although it was not possible to analyse the one-to-one messages exchanged between individual students or group project members, indications are that these played an important role in the facilitation of collaborative work and peer support and encouragement. A group member, who chose not to forward group messages to the U.K. observer, gave her reason as not wanting to filter the *personal* and *intimate* nature of the group communication for consumption for someone external to the group. This group also ensured that their exchange of messages always had a constructive, positive and supportive tone, which indicates the

extent to which it is possible for email communication to expand beyond a merely instrumental function. Students are able to negotiate and implement useful communication guidelines through email

Despite the positive role that email played in the RBO online course, not all students are as comfortable with written communication as they are with face-to-face, oral communication. A number of students expressed a need for some synchronous or even face-to-face communication. Students who mentioned this specifically had not met course pre-requisites, and would have preferred an introductory face-to-face session to make good their deficits.

6.4 Key technological aspects of the RBO on-line course

In the development, presentation and delivery of the RBO on-line course, the course presenter used computers and an existing computerised (Inter) network infrastructure. In order to be accepted on the course students were expected to have access to similar equipment and network infrastructures. An implied key technological requirement of the RBO on-line course was the availability of stable and reliable telecommunication links to facilitate speedy and convenient Web access and email communication. A further course pre-requisite was that students were required to have familiarity with the technology and related software before commencement of the course.

6.4.1 Internet links

Many of the frustrations experienced during the course were related to unstable or unreliable Internet links. Two students who left the course were unable to continue as a result of the inability of Internet Service Providers to deliver adequate services in the students' home regions. For similar reasons two other students who remained on the course resorted to travelling to the course's home university site to access the RBO classroom material and email messages. One of these could access email twice a week only (at most) and had limited time to contribute to messages or become immersed in the dynamics of the classroom. He considered that this affected his enjoyment of the course and limited the benefits he derived. (Nevertheless, he successfully completed the module and subsequently obtained employment with a company specialising in Web-based learning management).

Most other students experienced access problems at some time during the course. In addition, two students had their computers struck by lightning and were out of touch while repairs were done. Another student was off-line for a week because of student unrest that prevented her from going to work where her computer and Internet link were located.

Modules that required face-to-face attendance which overlapped with the RBO course also took students away from their Internet and email links, causing delays in meeting deadlines.

Thach and Murphy's (1995) recommendation of a team approach to improve communication between networking support staff and academic staff, would have been helpful in those circumstances when the home university network service was taken off-line without warning.

6.4.2 Course prerequisites

Students who had not met the course pre-requisites concerning basic familiarity with the Internet technology, their email systems and related software experienced frustration in the early stages of the course. Those who had not met the pre-requisites also did not fare as well in their course results as those who had met them.

Despite the difficulties experienced by those who had not met the pre-requisites, high levels of motivation were evident among those who persevered. However, group projects were hampered when group members had deficits caused by not meeting course requirements. This either caused delays or required other group members to pick up extra work.

6.5 Key economic factors in the RBO on-line course

As the RBO on-line course was set up within the context of a M.Ed. course in computer-assisted education, the course presenter and students had access to computer equipment and were already computer literate. It was not necessary to budget for software as the course presenter and students used free- or shareware software for the course work.

No standardised criteria for equipment were required, though one student experienced some difficulties because of a less powerful computer that could not run a more user-friendly version of email software.

While the university that hosted the course was able to use an existing network infrastructure, some of the students had the additional expense of Internet links and telephone costs. For students living considerable distances from the home university, these costs could be offset against travel and subsistence expenses required for attending face-to-face courses.

6.6 Recommendations

Recommendations from the results and conclusions drawn from this investigation should clearly take into consideration various options for the setting up of a 'virtual' classroom. As noted, pedagogical, motivational, learner interface and economic aspects inform the approach taken and the learning methodologies it posits. Hence Table 6.1, presented over two pages, provides a summary of specific recommendations on these aspects that resulted from this case study of a Web-based on-line course for adults.

Moreover these recommendations derive from the present study only, which involved a relatively small number of students with limited access to those who left the course prematurely. The field is wide open for further research into the telematic teaching of adults via the World Wide Web and related methodologies.

Table 6.1 Recommendations for a successful Web-based on-line course

Aspect	Recommendations
Pedagogical	<ul style="list-style-type: none"> ▪ Use this methodology for collaborative, self-directed, and resource based approaches with computer literate students. ▪ Precede collaborative projects with adequate exposure of students to theory and practice of collaborative group work. ▪ Incorporate evaluation of course processes individual progress and assignment products. ▪ Negotiate evaluation criteria with students. ▪ Incorporate 'gate-keeping' procedures to encourage 'lurkers' and to ensure that they have not left the course. ▪ Plan and implement contingency arrangements in the event of students leaving the course and reducing group numbers. ▪ Establish course entrance pre-requisites and enforce them. ▪ For courses where the content of the course is not around Internet and web skills, embed the training and teaching of these skills into the course. ▪ If email is the sole means of communication, plan deadlines to take account of email transmission delays and unavoidable circumstances that take students away from their Internet links for critical periods of time.
Motivational	<ul style="list-style-type: none"> ▪ Design course to cater for diversity and step-by-step learning. ▪ Facilitate a sense of classroom ownership by: <ul style="list-style-type: none"> - designing a metaphor that motivates participants to form a supportive and cohesive group - providing opportunities for students to help construct the classroom with their own web-sites.

Table 6.1 (continued)

Aspect	Recommendations
<p>Learner interface</p>	<ul style="list-style-type: none"> ▪ Use the web for storage and presentation of information and for presentation of student individual and collaborative work. ▪ Provide adequate course guides, outlines and information on course management. ▪ Provide Web access to existing non-HTML document format resources by means of portable document format (pdf) that can be accessed by free downloadable readers e.g. <i>Acrobat</i>. ▪ Base learning web-site designs on research into interface design, navigation and appropriate metaphors. ▪ Design web-based materials to take account of a variety of systems and display resolutions. ▪ Provide text only alternatives for faster loading for students with low-end computer systems and those who pay for their own on-line time. ▪ Use email and classroom email list for communication, interaction and feedback ▪ Include exercises to facilitate rapport and trust among participants as well as reflection and creativity. ▪ Encourage students to negotiate and implement useful communication guidelines to reduce communication errors and misunderstandings. ▪ Encourage communication by setting up the email list so that by default replies are sent to all subscribers to the list. ▪ Encourage membership of an active external email list on related topic to serve as a model ▪ In large classes consider inclusion of a separate list if discussion of trivia and off topic chat increase to a point beyond contributing to the spontaneity and spirit of the classroom, and interfere with course participation and goals. ▪ Monitor and research the possibilities of supplementation with synchronous CMC, including transmission of synchronous visuals, as technologies merge and bandwidth improves.
<p>Techno-logical</p>	<ul style="list-style-type: none"> ▪ Establish that students have access to stable and reliable connectivity and familiarity with the network systems prior to starting the course. ▪ Provide a guide of basic standards for hardware and software to facilitate adequate access to the course components. ▪ Provide on-line basic network support and communication at the university learning site. This should include prior warnings of planned classroom server down time and any changes made to the systems that affect access, navigation or transfer procedures.
<p>Economic</p>	<ul style="list-style-type: none"> ▪ Inform students of possible telecommunication and access costs. ▪ Research and provide access to information on off-line browser technology to reduce the time on-line, hence the cost. ▪ Factor in the cost of training or time to develop appropriate Internet expertise in circumstances where course presenters are not Internet- or web-based learning literate.

6.7 A final word on the RBO classroom methodology

A key aspect of the RBO on-line course was that the processes that students experienced in learning about *Computer-assisted education via the Internet* were grounded in the actuality of using the tools and materials of the topic, namely the Web and email communication. Viau (1994) contends in relation to this type of learning, that this active, hands-on approach results in an educational experience that is coherent in its context and results in usable and valuable products. Students who participated in the RBO on-line classroom 'lived it' for twenty weeks and produced usable web-sites of information to inform their work and practice in the field. These products have remained available on the web where they continue to be accessed by those who attended the course, the course presenter and students of the courses that followed, as well as by other students and professionals in the field in South Africa and internationally.