Chapter 4

Project description: training resource programme

Contents

4.1 Introduction

This chapter describes the design, development, implementation and evaluation of the training resource programme for cataloguing students. All the components of a mix of media and technologies, except the computer program described in chapter 3, had already been designed and developed as part of Technikon SA's training programmes and were utilised for the specific training of cataloguing students. Special attention will therefore be paid to the utilisation of the components to form an integrated training resource. The focus is on the utilisation of the virtual campus, TSA Co-operative Online Learning (TSA COOL) (previously known as TSA Online).

The goal of this chapter is to report on the investigation of the instructional and motivational effectiveness of a mix of media and technologies for training cataloguing students.

The utilisation of a mix of media and technologies could:

- train cataloguers that better meet the requirements from industry than is currently the case
- meet the requirements set by outcomes-based education
- complement the experiential training component of a cataloguing course
- incorporate the characteristics of the adult learner (specifically the cataloguing student)
- apply the learning theories in the education and training of cataloguers
- address the existing problems and limitations of training cataloguers, especially in distance education

- provide alternative training methods to accommodate different learning preferences
- provide media and technologies to complement the existing printed course material
- provide more opportunities to communicate with the lecturer and fellow students
- provide additional exercises in different formats

The report in this chapter commences by listing the relevant research questions, the aspects of the questions as addressed by the training resource and the means of investigation of each question. This is followed by the research methods used to conduct the research, the needs analysis, design, development, implementation, evaluation and the results pertaining to the resource. Finally, a summary is given, and conclusions and recommendations are proposed.

4.2 Research questions

Research questions 9, 10 and 11 (as set out in Table 1.2 of chapter 1) are addressed by the development of the resource training programme. The aspect addressed by each research question and the means of investigation are summarised in Table 4.1.

Table 4.1: Research questions and aspects addressed by the computer-aided program

NO.	QUESTION	ASPECT	MEANS OF INVESTIGATION
9	What developments have taken place in the utilisation of a mix of appropriate media and technologies in training cataloguers?	Adaptation of media and technologies for cataloguing course	Questionnaires, observations, interviews, focus group discussions
10	What are the advantages and disadvantages of training cataloguers by means of a mix of media and technologies?	Advantages and disadvantages as experienced by students	Questionnaires, observations, interviews, focus group discussions
11	How should training by means of a mix of media and technologies be designed to serve as an appropriate training mode?		Questionnaires, observations, interviews, focus group discussions

4.3 Research methods

The training resource was developed as a combination of various media and technologies to present the cataloguing course. The research is primarily a qualitative study. Questionnaires, interviews, observations and focus group discussions were used to evaluate students' experience of the resource. Questionnaires were sent to all the students registered for the first registration period of 2000. Students completed the questionnaire after spending some time using the resource. Observations were made and interviews,and focus group discussions were held with students (individually and groups of five to ten students) who could attend contact sessions at Technikon SA's main campus in Florida (Roodepoort, South Africa).

Observation entailed the researcher being present with the students while they worked with the components of the training resource, to record noteworthy incidents and comments.

The interviews and focus group discussions were held to examine the students' response to the training resource.

4.4 Development process

The following phases were addressed during the process:

- Needs analysis phase:
  - Goal analysis
  - Target population analysis
  - Task analysis
  - Content analysis
  - Instructional strategies analysis
  - Media analysis
- Design phase
- Development phase
- Implementation phase
- Summative evaluation phase

The development process is illustrated in the Table 4.2.

Table 4.2: Development process

COMPONENTS	NEEDS ANALYSIS →	GOAL ANALYSIS →	DESIGN →	DEVELOPMENT →	IMPLEMENTATION →	EVALUATION →	REVISION →
SPECIFICS	Syllabus needs Students' needs Lecturers' needs Needs from practice	Target population Learner characteristics Task analysis Content analysis Objectives Learning outcomes Evaluation criteria	Teaching strategy Design of study material Media selection User interface Instructional activities	Integration of media components Preparation of students	Making programme available Monitor Trouble shooting	Students' progress Performance assessment Summative evaluation	
METHODS	Critical analysis of reported research (chap. 2)	Student profile Subject matter specialists Syllabus documents Critical analysis of reported research (chap. 2 & 3);	Research methodology (chap. 1) Design Criteria (chap. 3 & 4)	Chap. 3 & 4	Chap. 3 & 4	Observation Assessment of exercises Questionnaires Interviews Specific case studies (chap.3 & 4)	
PRODUCTS	Needs assessment report	Student profile Content outline Instructional objectives	Flowcharts Instructional archetypes Scripts	Programme documentation Components of training programme	Programme documentation	Programme documentation Formative evaluation report (chap. 3)	Summative evaluation report Recommendations (chap. 4 & 5)
SUMMATIVE EVALUATION							

4.5 Needs analysis phase

During the needs analysis phase attention was paid to the following:

4.5.1 Goal analysis

The goal analysis was discussed in chapter 3 in order to derive a specific goal for the computer program. The goal for the training resource was formulated as follows:

"To enhance training in the knowledge and skills of cataloguing for Library and Information Studies students by means of a training programme of mixed media and technologies that students can use at their own time where it is convenient for them."

4.5.2 Target population analysis

The target population analysis was applicable to the computer program as well as the complete training resource. It was discussed in chapter 3.

4.5.3 Task analysis

The task analysis for the training analysis focused on the cataloguing course as presented at second year level. As indicated in Figure 4.1, the course includes training in description and assigning access points according to the Anglo American Cataloguing Rules (2nd edition, 1988 revision), classification according to the Dewey Decimal Classification system (21st edition) and the assignment of subject headings according to the Sears List of Subject Headings (16th edition).

The broad outcome of the course is formulated as follows:

"To conduct cataloguing, classification and subject heading assignment of printed materials."

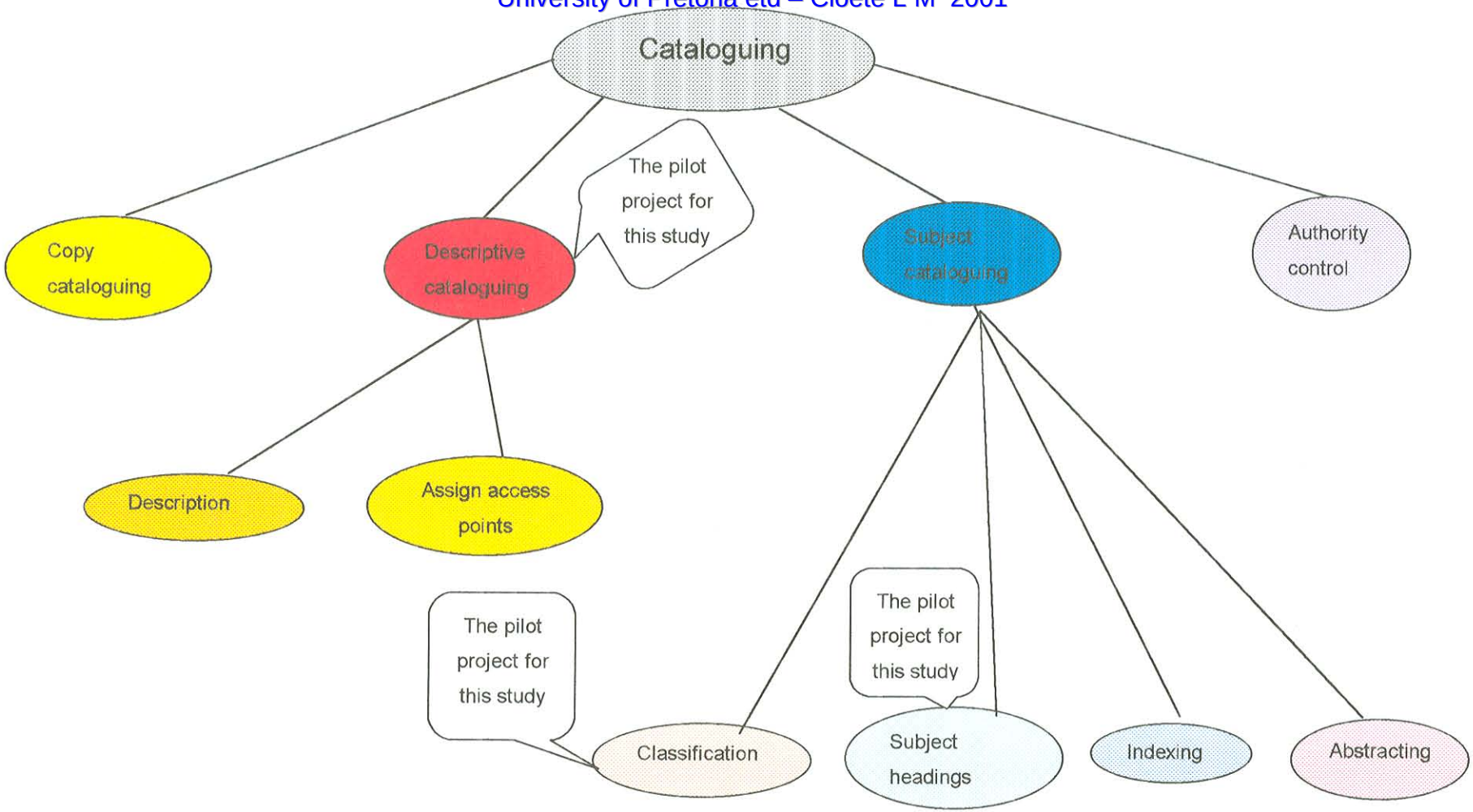


Figure 4.1: The cataloguing process

4.5.4 Content analysis

The content analysis was conducted to determine what the training resource should contain. The study guides contain the tutorial material for the course as well as activities and projects that students have to perform at their workplace under the guidance of a mentor. From the target population analysis and interviews with students it became evident that there was a need for more communication with the lecturer and fellow students. There was also a need for more practice opportunities.

The computer program could be included to provide more practice opportunity. The availability of a virtual campus, namely TSA COOL, could be utilised to facilitate more communication opportunities and provide more practice opportunities.

There are already components of a training resource programme in place. These components are the conventional communication channels (telephone, fax and e-mail), the contact classes and mentor system. Although these components had been implemented, their efficiency had never been evaluated. It was decided to conduct such an evaluation together with the evaluation of the newly introduced components.

The training resource consists of:

- print material (study guides, tutorial letters and prescribed books)
- practical exercises (drill exercises in print format)
- contact classes (presented monthly in Johannesburg and Durban)
- communication channels
- mentor system
- TSA COOL (virtual campus)

- computer program

4.5.5 Instructional strategies analysis

The instructional strategies analysis was conducted for the training resource as a whole and was discussed in chapter 3.

4.5.6 Media analysis

The following media types and technologies (from Table 2.6) were selected (Table 4.3):

Table 4.3: Media types and technologies

MEDIA TYPE	TECHNOLOGIES	USES AND ADVANTAGES	LIMITATIONS
Print-based	Handouts Study text Prescribed and recommended books Written/printed assignments	Easy to read Enables self-paced reading and study Can be re-read	No interaction Time delay in feedback
Visual-based	Diagrams Charts Pictures	Another method to enhance explanation	Can distract and confuse Memory-intensive Can be used for decorative and not functional reasons
Telecommunications-based	Telephone Fax E-mail Internet	Interaction Immediate feedback	Hardware-intensive Communication infrastructure intensive Training in use necessary
Computer-based	Computer-managed instruction Computer-based testing Computer-based instruction Electronic performance support systems	Another method to enhance explanation Interaction possible to some extent	Hardware intensive Communication infrastructure intensive Training in use necessary
Human-based	Lecturer Tutor Mentor Contact classes	Interaction Immediate feedback	Not always available when needed

4.6 Design phase

The design of individual components as well as the training resource as an integrated whole was done.

Contact classes and communication channels had never been designed as such, but are an integrated part of the training process. Their efficiency needed to be evaluated to determine necessary improvements.

The mentor system was already in place and apparently functioning well. It had, however, never been evaluated. The results from the evaluation would indicate whether a revision of the design was necessary.

The computer program was discussed in chapter 3.

TSA COOL had already been designed and implemented for all TSA students. The researcher had to utilise and adapt, as far as possible, the facilities for the cataloguing course.

4.6.1 Design of printed course material

The printed course material was designed in collaboration with the Centre for Courseware Design and Development (CCDD), a division of Technikon SA. The CCDD was established in 1994 to ensure the provision of courseware that takes into account learner profiles. Since the establishment of outcomes-based education and training, the principles underlying OBET have also been incorporated in courseware design. Team members include a project leader, subject expert (lecturer), instructional designer, language practitioner and electronic originator. The courseware includes activities set according to specific

learning objectives, self-assessment exercises, functional graphics and mental models such as concept maps and taxonomies.

4.6.2 Design of the virtual campus (TSA COOL)

A virtual classroom is defined as a "class that exists on the Internet without traditional class meetings. Students retrieve information via a telephone, modem, and computer from anywhere in the world" (French, Ransom & Bett, 1999:134). According to Lazenby (1998:46), a virtual campus "could be described simply as an electronic platform which provides existing institutional services, as well as additional products enabled through particular technology attributes". It is therefore unlimited by geographical location, time or space.

Sites used for distance education typically provide extensive online course content with links to WWW material (Malaga, 2000:293). They usually also provide feedback mechanisms and a wide range of communication technologies such as discussion groups, chat rooms, notice boards and e-mail.

Learning involves the development of new knowledge and understanding through individual assimilation as well as group and peer interaction (Rea et al., 2000:135). Communication is therefore an important component in the learning process. An obvious means to increase convenience of communication among students is the use of in-place technologies. In-place technologies for communication with the lecturer that were already widely used were the telephone and fax facilities.

TSA COOL is combined with the traditional print-based distance education media and could therefore be referred to as a hybrid campus. TSA COOL partially supports a constructivist paradigm in that it encourages collaborative learning. This takes the form of group

activities, a discussion group facility, links to sites with related topics, an e-mail facility to the authors of the site and contact with live subject matter experts. TSA COOL promotes discovery learning in that it has links to other organisations' web sites.

The development of TSA COOL and the extent to which a virtual learning environment facilitates constructivist learning is described by Lazenby (1998).

The design and development of TSA COOL started in 1997. Since 1998 it has been refined and most of the courses offered at TSA can be facilitated with TSA COOL. However, there is generally still reluctance amongst academics to embrace these facilities at their disposal, for the following reasons:

- They believe their students do not have access to the Internet and therefore cannot benefit from TSA COOL.
- It is considered extra work added to an already heavy workload.

The researcher believes that the facilities available on TSA COOL can greatly contribute to a training resource programme for cataloguing students. They are therefore included in the programme.

The Integrated Technology Centre (ITC) of TSA is responsible for the design, development, implementation and maintenance of TSA COOL. A number of essential issues that have to be addressed during the design and update of TSA COOL are the following:

- During the design the different interfaces and infrastructures that the students may have, must be taken into account.
- Different browsers are used, for example Internet Explorer and Netscape Navigator. Of those, different versions with variant capabilities are used.

- Different e-mail programs are used. It is therefore important not to give instructions that are program-specific.
- Different computers, namely the IBM PC-compatibles and the Apple Macintosh computers, could be used. Instructions for each type of computer should be given where it is anticipated that both types are being used by students.
- Screen sizes vary. The content should be designed to accommodate the smallest or most common screen size that students will use.
- Different operating systems must be taken into account. The content must be generic so that the instructions could be followed on any operating system. Instructions must not be specific to the operating system.
- Different Internet connections are used with variable speeds, for example a 28.8k Baud modem that a student may use at home is much slower than a direct connection at larger institutions. The loading time of graphics, sound and video clips will be so slow that it will discourage the learners from using the Internet.
- Different Internet service providers (ISPs) provide a variety of services, availability, response time and costs. For example, some students may have to pay by the minute and therefore content should be designed so that large parts can be downloaded at a time and worked in offline mode. Students then only have to go online if they are ready with a response or to continue with the next section of work.
- Students should be provided with support in the form of instructions and guidelines on how to use and benefit from the online learning, for example, guidelines on e-mail etiquette and the use of the discussion group facility.

4.7 Development phase

The development phase focuses on the development of TSA COOL, since the other components for the training resource had already been developed.

TSA COOL was designed and developed to accommodate all the students and courses offered by the Technikon. It is therefore not possible to design a virtual campus for specific courses. Lecturers are encouraged to utilise and adapt the facilities on TSA COOL to best meet the needs of their students. The development phase of this component of the resource training programme therefore focuses on the utilisation of TSA COOL for training cataloguing students.

The following screen captures illustrate the utilisation of the facilities of TSA COOL for cataloguing students.

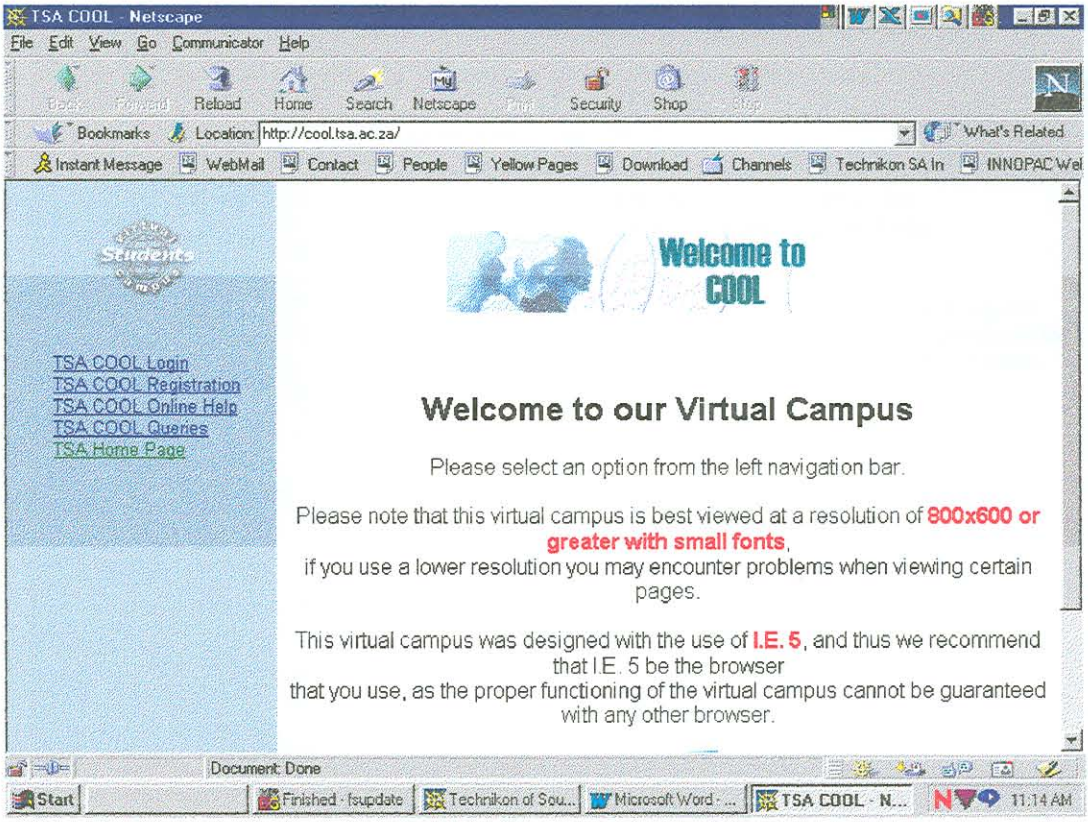


Figure 4.2: TSA COOL welcome screen

When students wish to use TSA COOL for the first time, they select TSA COOL Registration. They fill in a short form providing their student number (which becomes their login name) and choose their own password. After registration, they can log in.

The welcome screen advises users of the appropriate resolution settings and browser selection.

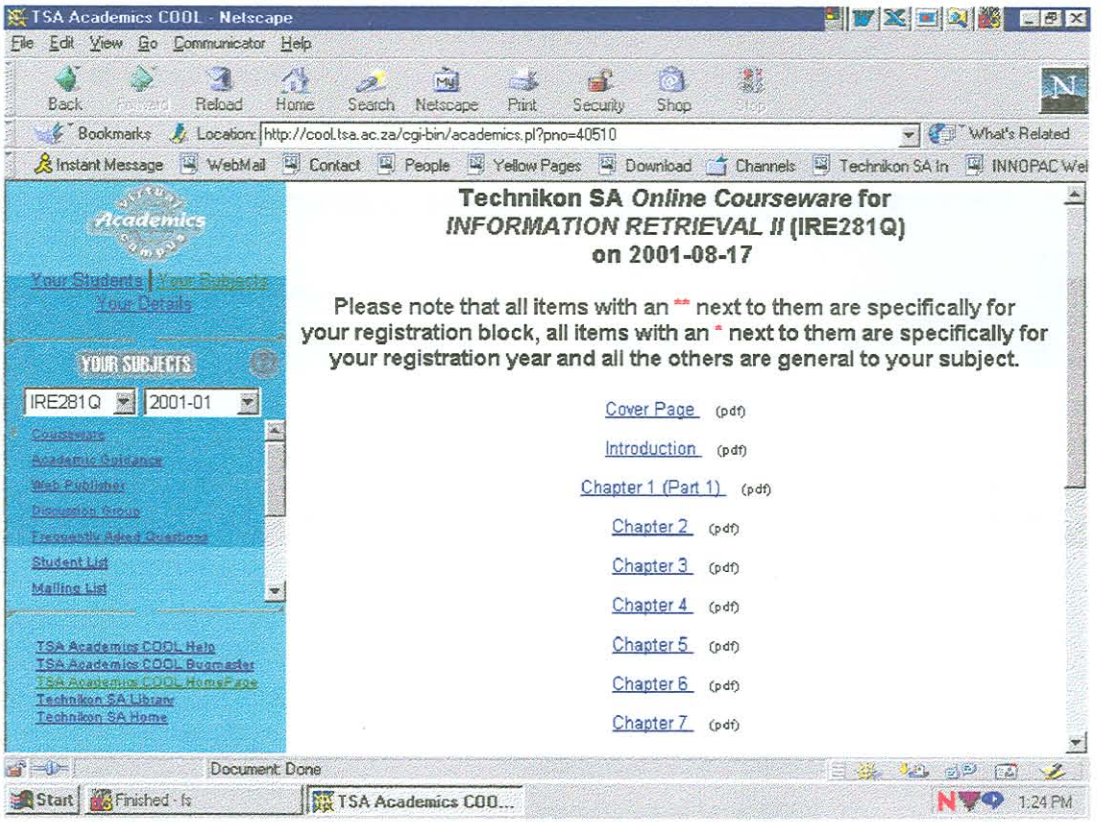


Figure 4.3: Electronic course material

In this area students find a page that will link them to electronic versions of the study guides they receive in the post. The electronic courseware is available in two formats, either HTML or PDF. The latter requires the Acrobat Reader to view the material. At present the course material can either be downloaded on the student's computer or printed. This delivery mode is passive since it is a replacement of printed course material (Nguyen & Kira, 2000:24). No form of interactivity within the course material is therefore possible. The major advantage of the availability of electronic course material is that students are able to access it easily without having to rely on the postal system. In the past an alarming large number of students never received their course material through the postal system. This resulted

in material being re-mailed at high costs and delays in the submission of assignments.

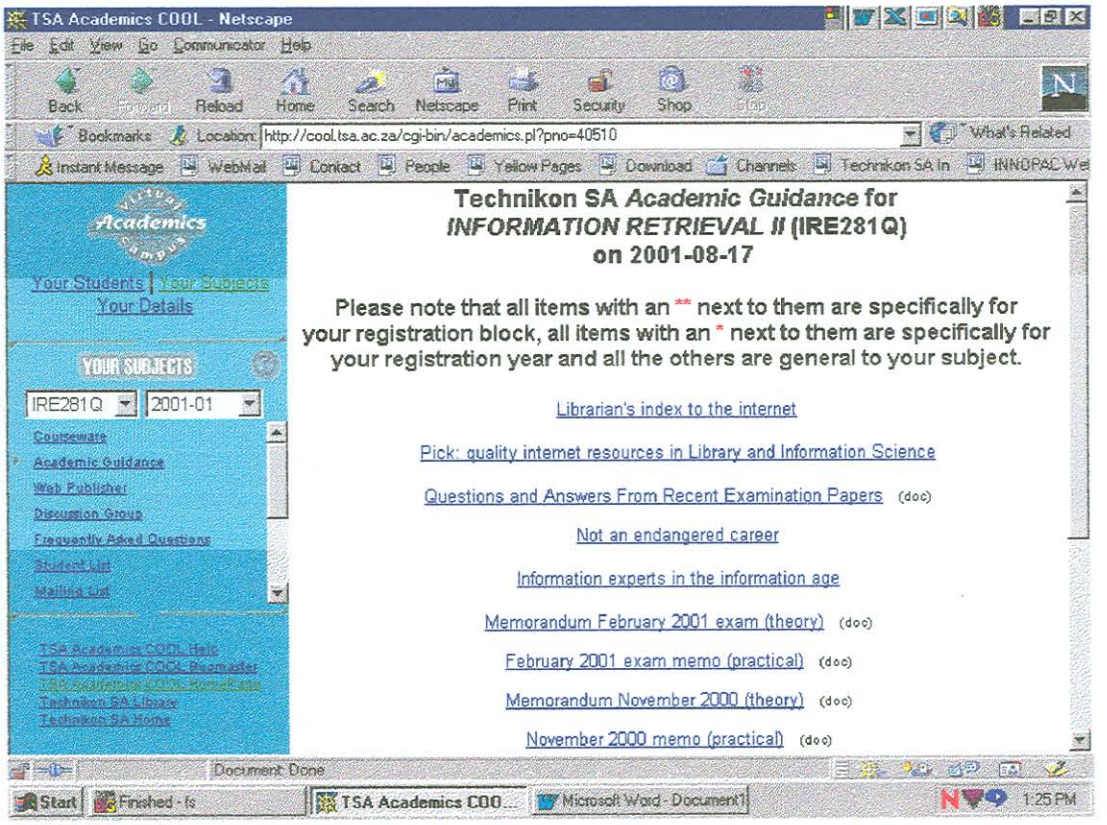


Figure 4.4: Academic guidance

By using the academic guidance facility, class announcements, tutorial letters, solutions to assignments, previous examination papers with memoranda and links to articles, etc., are made available. The material is simply converted into HTML or PDF format or a link is given to a MSWord document. Links to other related Internet resources are posted in a similar way on the academic guidance web page. Posting and uploading is done by using the Web Publisher facility.

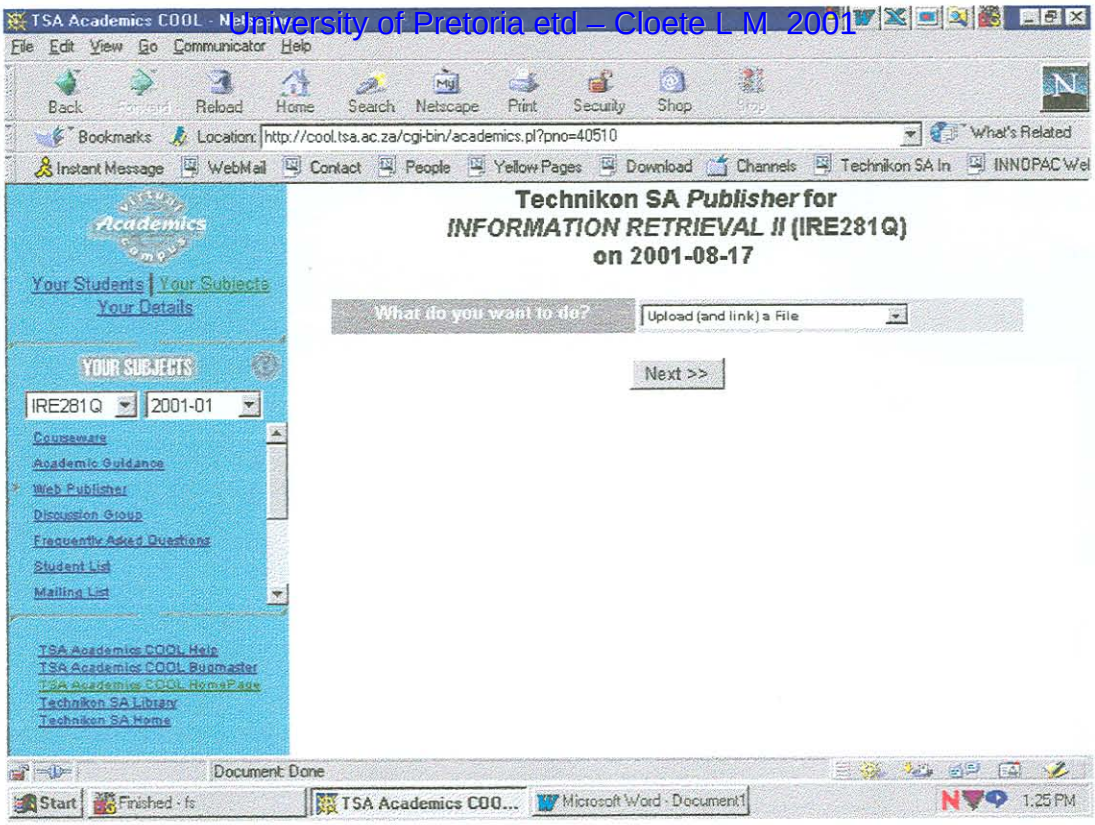


Figure 4.5: Web Publisher facility

The information can be viewed with an Internet browser or reader, downloaded and printed by students.

Web-based teaching can be made interactive in an attempt to encourage active learning since the Web's greatest intrinsic power is that it encourages branched, non-linear instruction (Brooks, 1997:28). Students can move around between materials created by the lecturer as well as materials created by others.

The content on these pages is supplied solely by the lecturer and it is up to the lecturer to encourage students to use this facility. Students need little encouragement to look at previous examination papers. They are encouraged to visit links to other related Internet resources. They are requested to post their comments on the information found at these links to the discussion group. Students receive bonus marks for their practical projects when they participate in these discussions.

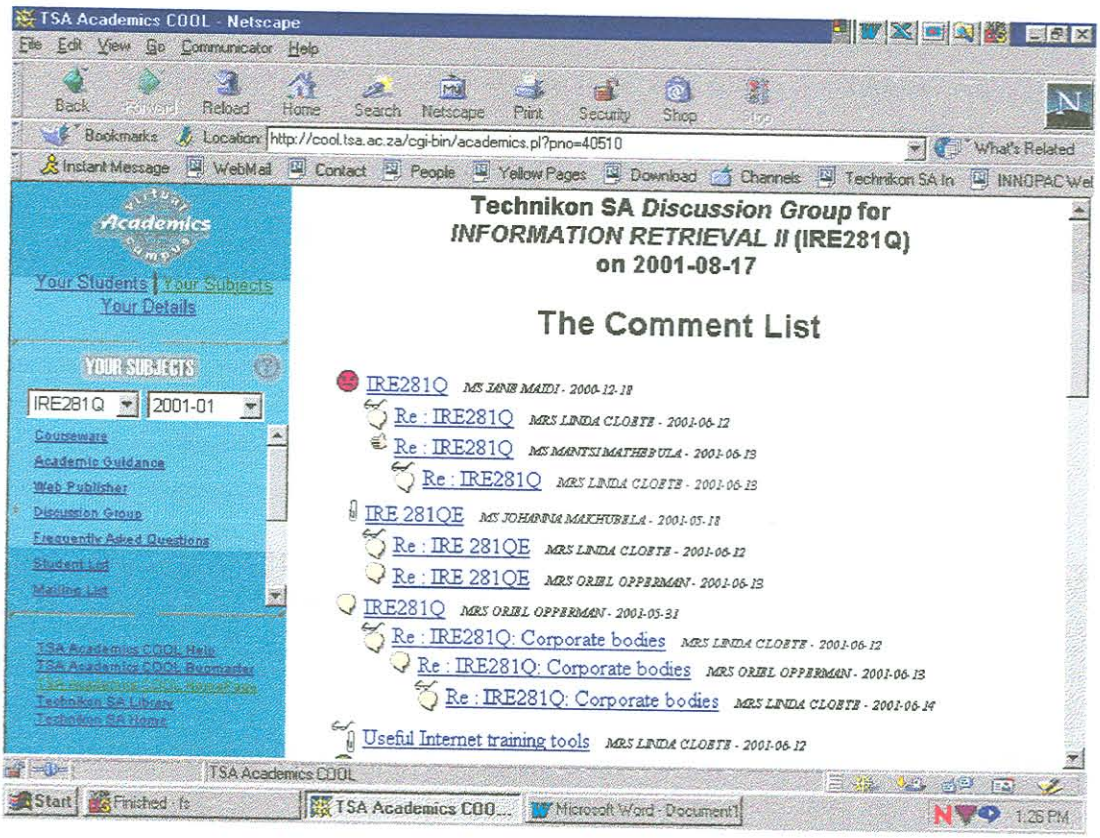


Figure 4.6: Discussion group facility

The discussion groups are there to enable interaction between the students, fellow students and their lecturers. They are in many ways the life and soul of this virtual campus.

Asynchronous communication technologies such as discussion groups enhance a class by providing a discussion medium for students who find it difficult to have contact with each other in a group.

Students should use discussion groups whenever they have a question to ask or a suggestion to make. The lecturers also have access to these discussion groups and also participate.

On entry into the discussion group, there is a list of various messages which have been posted. Each of these messages has a title, who posted it, the date the person posted it and an icon representing the type of message.

There is a list of the various icons and their meanings at the bottom of the discussion group page. Each message that has been posted by a lecturer will have a pair of glasses next to the normal icon.

The discussion group facility currently only allows for text-based interaction. The discussion group has to be checked periodically by the lecturer and students to see if there are new postings. The group focuses on presenting a topic or problem and generating a discussion around it.

Students are encouraged to use this facility, especially to communicate with one another. They should realise that they are no longer in isolation from one another, but instead can learn from (and support) one another by sharing information, ideas and techniques.

When students were first made aware of the discussion group facility, there was very little response. Students had to be reminded and encouraged via e-mail and tutorial letters to use it. Once one student started posting messages, other students began to respond and pose new issues.

At the time of writing this report, students were asking questions about and discussing the interpretation of certain AACR2R rules. The lecturer corrected any misinterpretation of the rules. Students were also organising additional group discussion classes among themselves. The lecturer got involved by offering to organise the venue for additional classes, but left it up to the students to decide on dates and times. The

students also used the discussion group to encourage each other before the examinations.

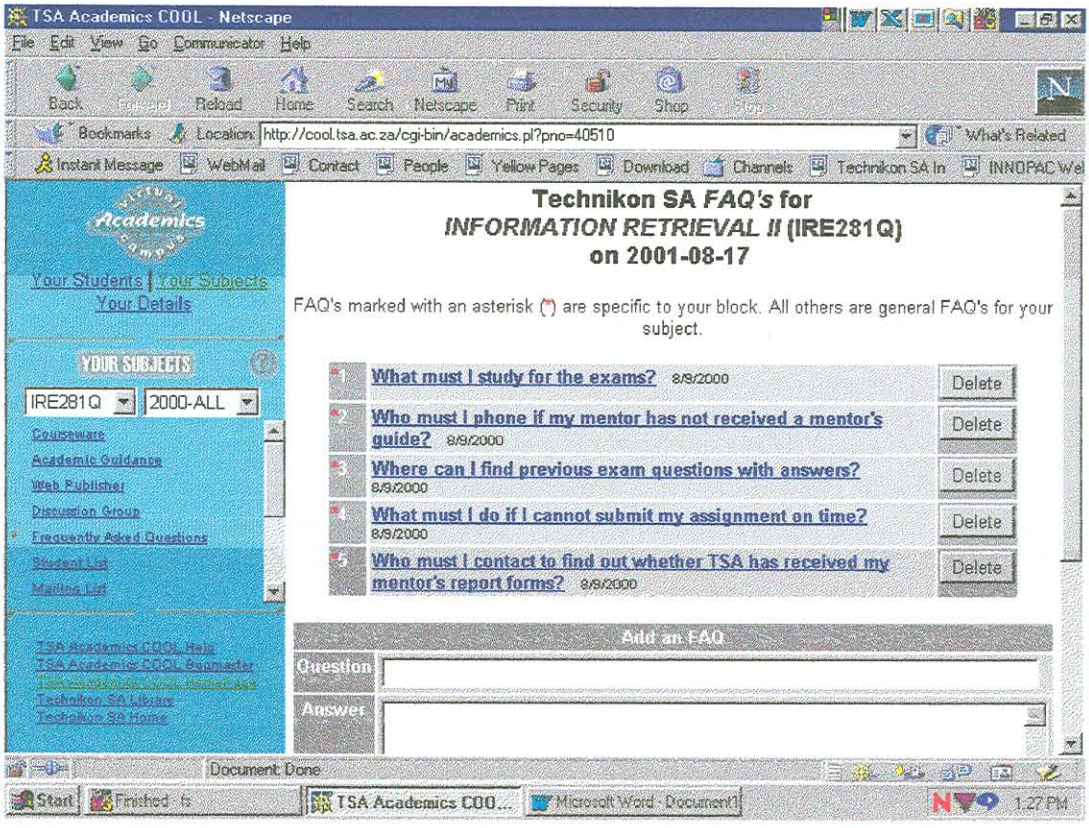


Figure 4.7: Frequently asked questions

The lecturer posts any frequently asked questions (FAQs) in this space. The FAQs act as a timesaver. Instead of having to respond to the same questions several times over, the lecturer types the answers, which are immediately available to the students. By the same token, students do not have to be at the mercy of telephone messages and the like to find answers to their questions. The FAQs for the cataloguing course were compiled from records kept by the lecturer of all the telephone and e-mailed questions received from students.

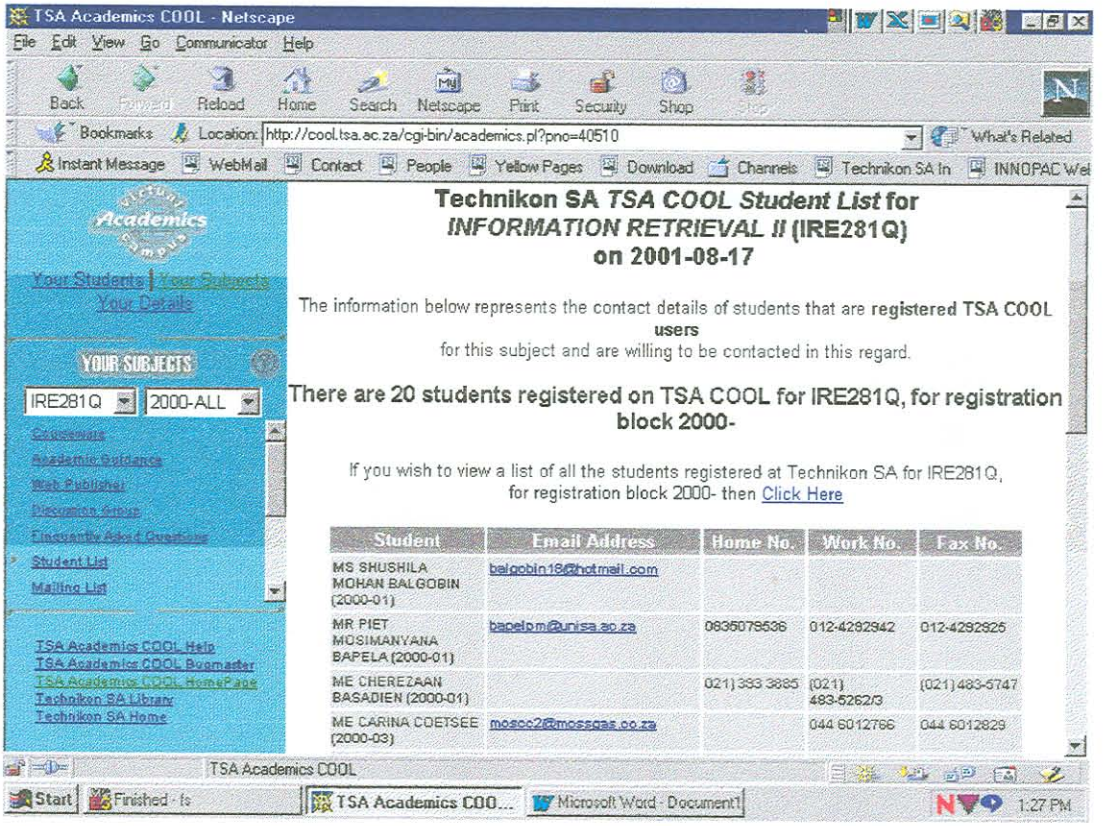


Figure 4.8: Student list

The student list facility provides a list of names with contact numbers and e-mail addresses of all the students registered on TSA COOL for a subject.

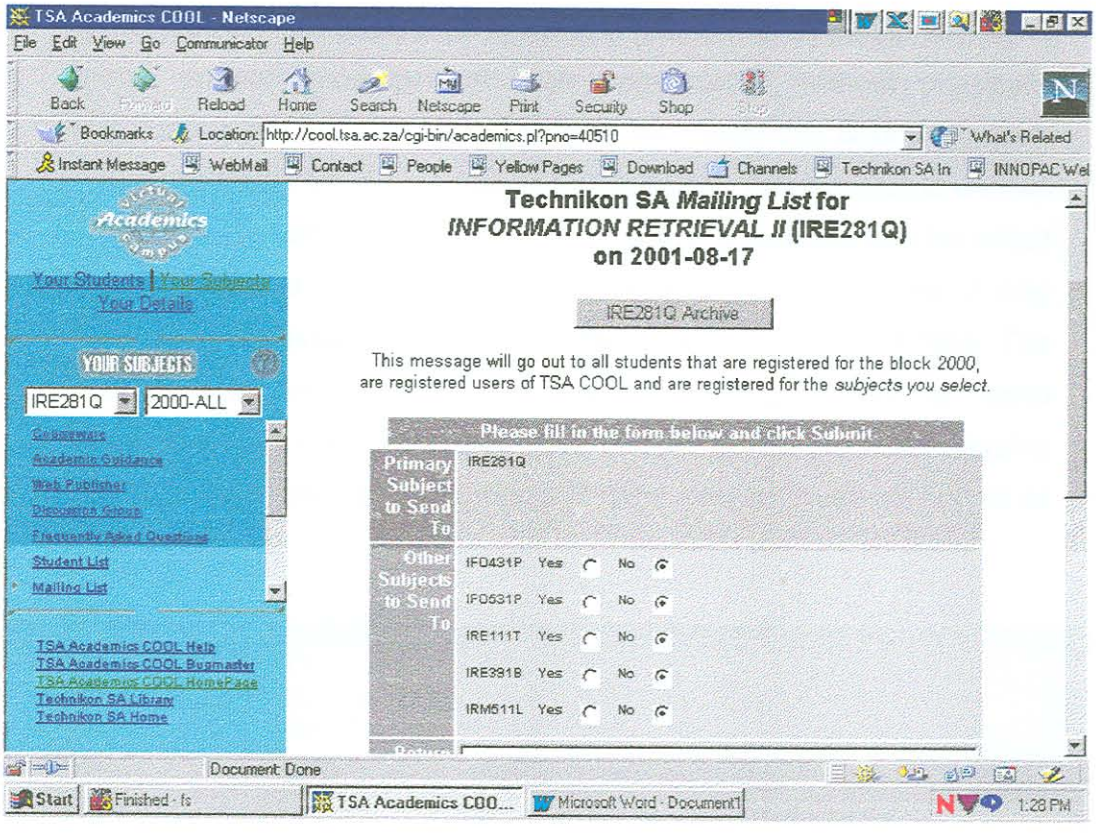


Figure 4.9: Mailing list

The mailing list enables the lecturer to send messages to all the students who have provided e-mail addresses. This serves as a listserv. It is possible to send a message (of a general nature) to the students of all the subjects for which the lecturer is responsible. Interactivity is also supported by a listserv where everyone on the list receives all the messages. Responses to a message can lead to a discussion on a topic among the participants.

Interaction through e-mail is possible by sending and receiving messages. E-mail is becoming the principal tool for maintaining interactions between students and lecturers in the distance education environment. There is often a delay in e-mail and this should be taken into account during the design. E-mail can be sent between the lecturer and some or all of the students, as well as among the students

themselves. The advantage of using e-mail is that all parties can send and answer messages at their convenience without physically disturbing one another, as is the case with telephone calls (Nguyen & Kira, 2000:23). Electronic files can be attached. Attachments to e-mails may include text, graphics, sound and video. Messages can be edited and forwarded. If one or more parties delay their response, it may result in necessary feedback not being received in good time. The cataloguing students are increasingly using e-mail to send assignments. The assignments are marked in the electronic version and e-mailed back to the students with the relevant follow-up tutorial as an attachment.

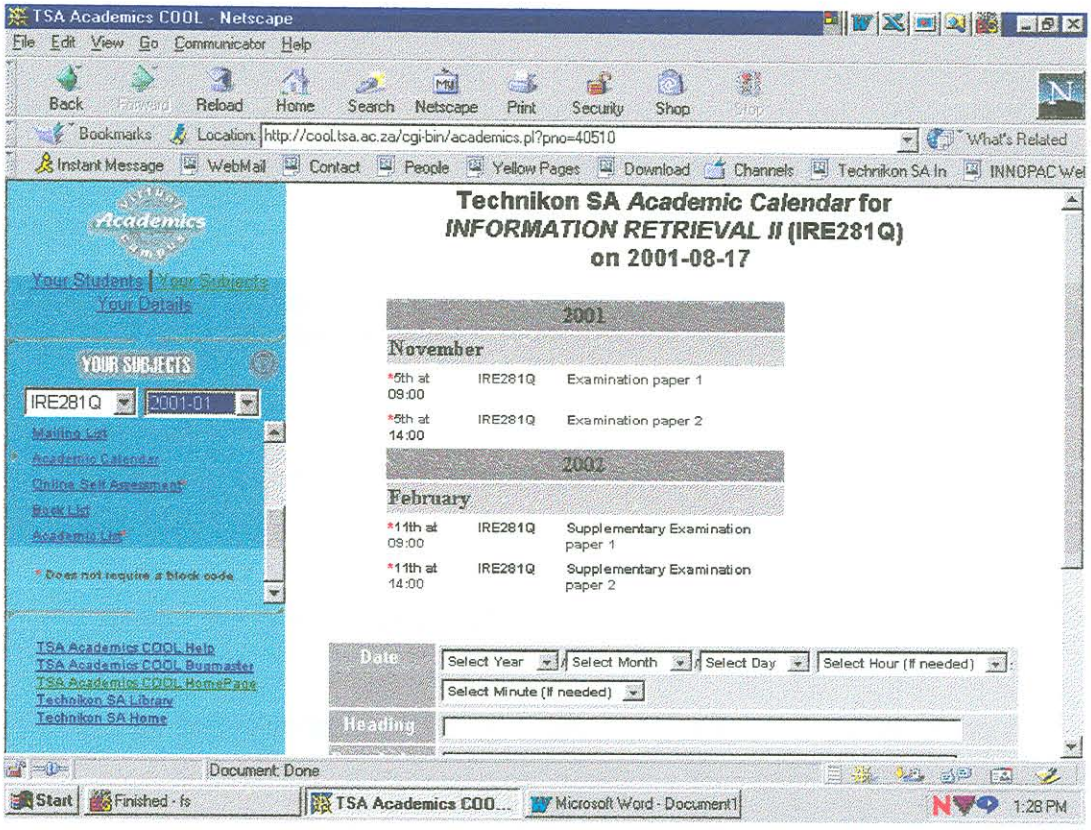


Figure 4.10: Academic calendar

The academic calendar provides all the important dates relevant to the course. Dates include examination dates loaded by the examination

department, as well as any other due dates or dates of group discussion classes added by the lecturer.

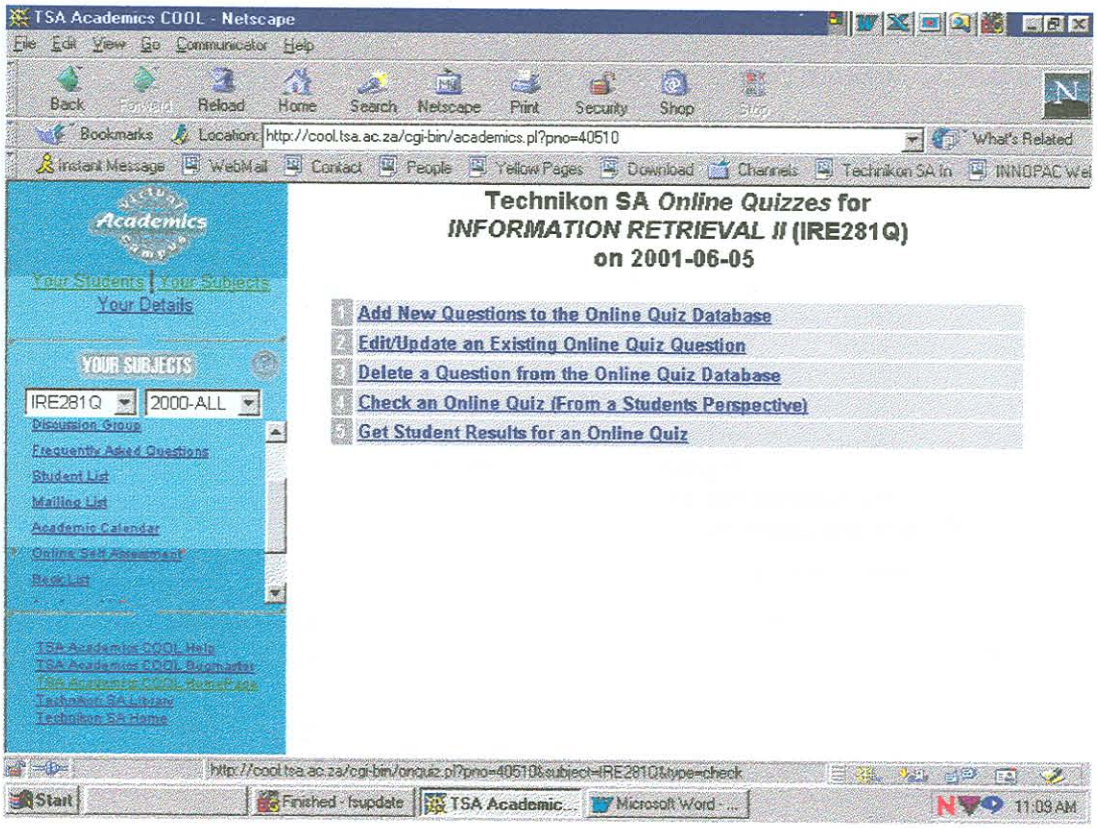


Figure 4.11: Online self-assessment

This facility provides students with online quizzes. The questions are related to specific chapters of their printed course material.

They first have to select which chapter they wish to test themselves on, then answer the multiple-choice questions that appear. Their attempt will then be marked and a report is generated. The result is also logged to the database for the lecturer's use. Although the result is logged, students can attempt these online quizzes as many times as they want, as the quizzes are randomised.

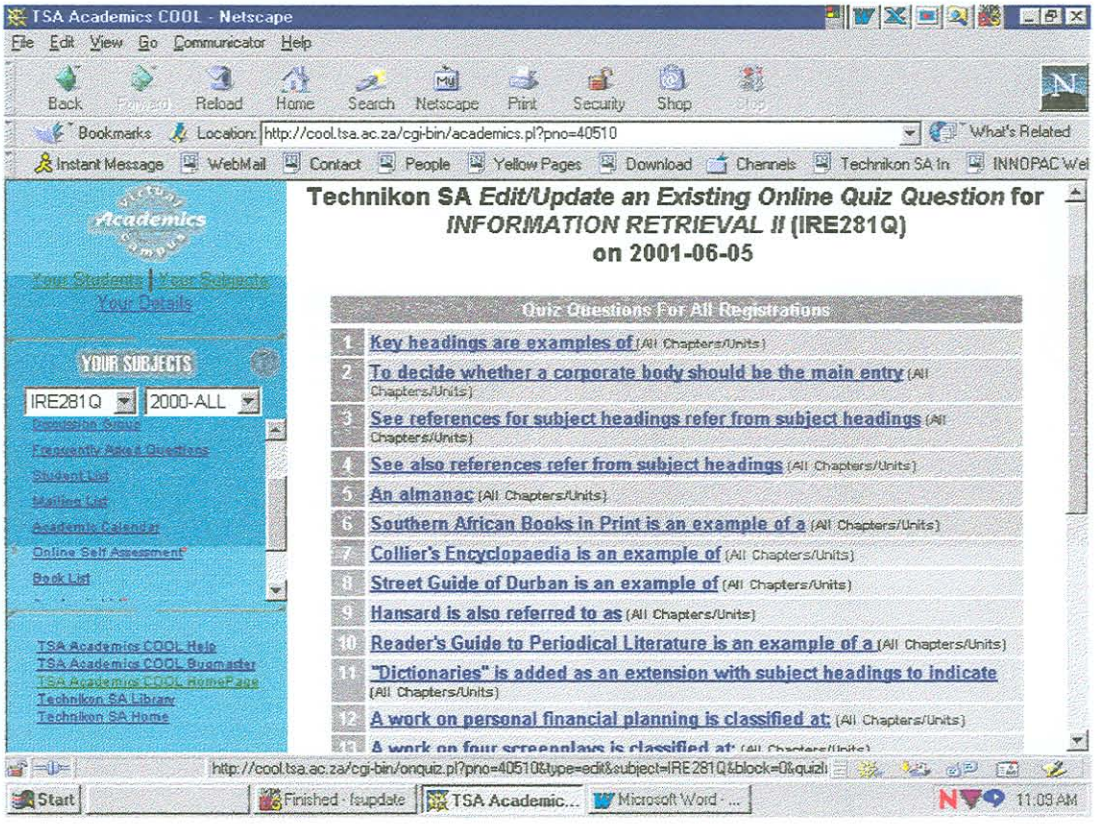


Figure 4.12: Example of self-assessment questions

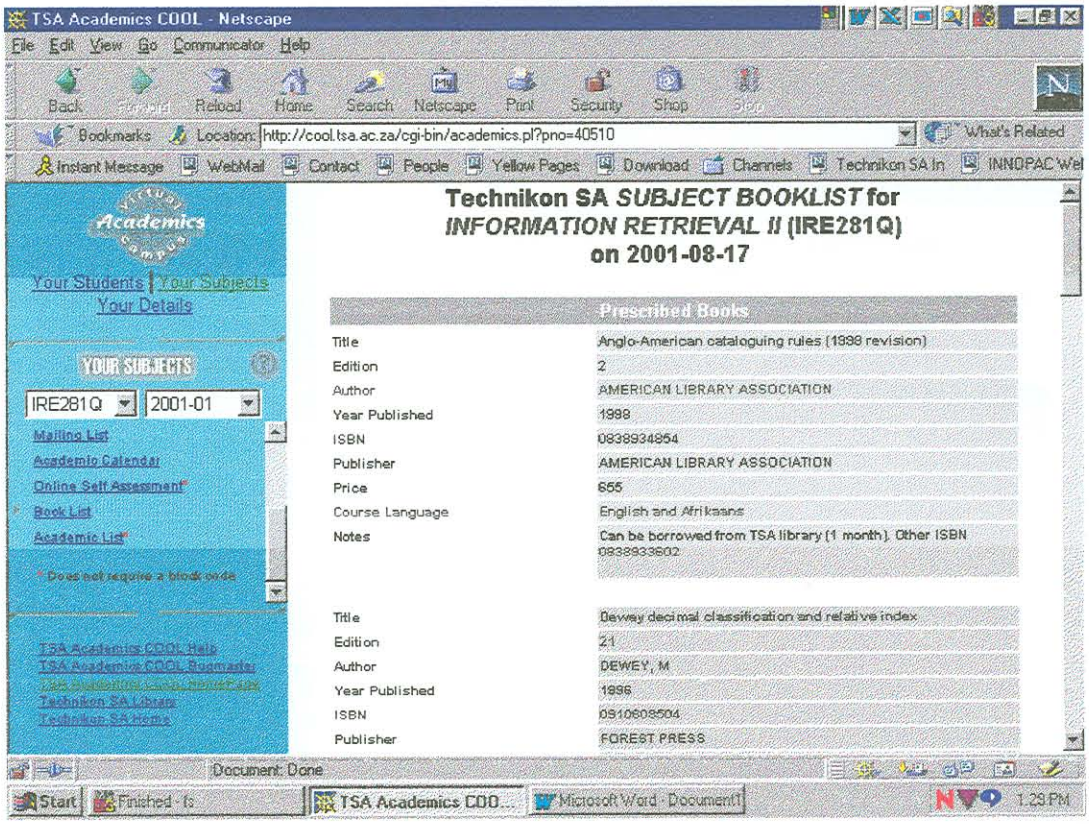


Figure 4.13: Book list

The book list provides all the details of prescribed and recommended books for the course, as well as where they can be obtained.

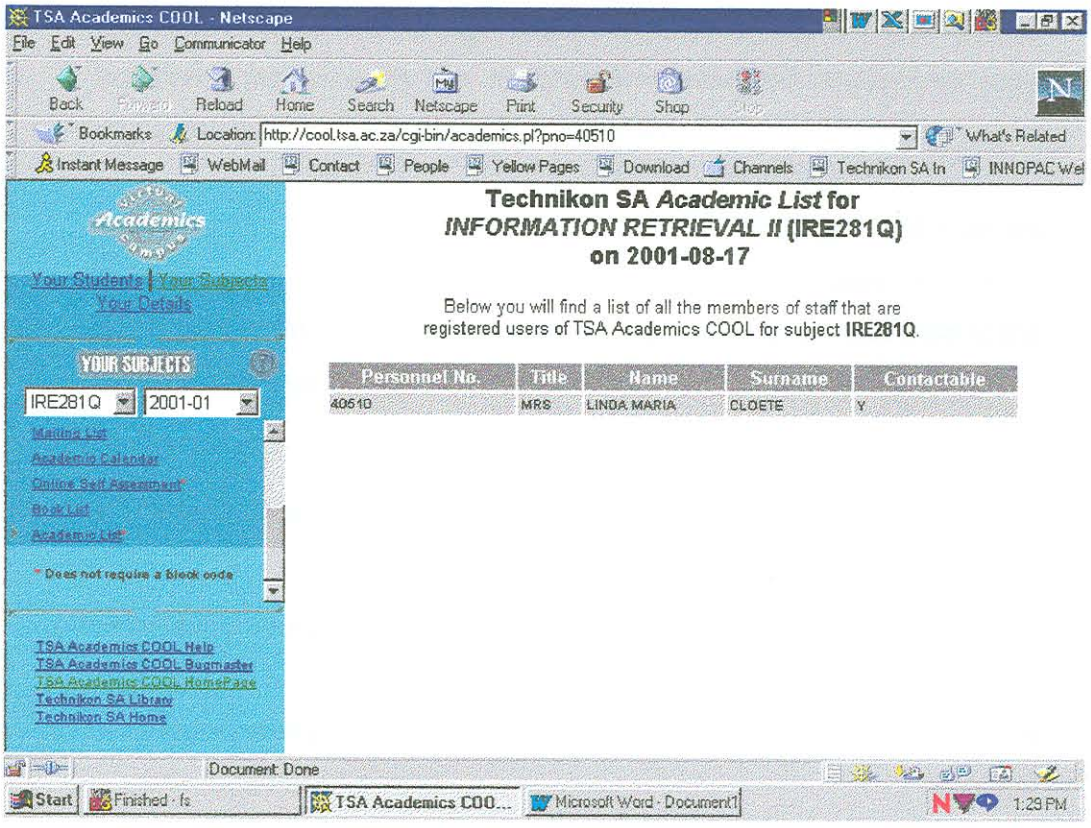


Figure 4.14: Academic information

The academic information provides the details of the lecturer.

The development of TSA COOL provided the technologies and additional communication channels for communication among students, namely e-mail and online discussion groups. E-mail and discussion groups also provided another means of communication with the lecturer. Students can now attach work, ask questions and provide comments. The major disadvantage of this asynchronous communication is that the student does not receive immediate feedback. During a synchronous communication session such as an office visit or telephone conversation, a question can be answered within five minutes. A number of hours or even days can pass before such a question is addressed via e-mail. The reason for this is that the lecturer often does not have time, owing to other obligations, to read

and address all the e-mail received on one day. There is thus additional pressure on the lecturer and even the student to reply immediately to e-mail (Rea et al., 2000:141).

Other forms of interaction such as interactive web pages and chat are currently not available on the virtual campus. These are more advanced forms of interaction. Depending on students' response to the existing facilities, the other facilities will be designed at a later stage.

4.8 Implementation phase

The training resource was implemented as follows:

- Printed study material was posted to the students registered for the first registration period.
- In the printed material students were informed about the mentor system, communication facilities (e-mail, fax and telephone numbers) and TSA COOL. They were encouraged to use these facilities regularly.
- They received the computer program (CD-ROM) when they started on the classification module of the course.

During this period students also had the opportunity to discuss the training resource with the lecturer (researcher) and fellow students via telephone, fax, e-mail and the discussion group facility on TSA COOL. All the comments and questions were noted. During a contact session at the main campus personal interviews and focus group discussions were held with the students. The information gathered was then organised to be used in conjunction with the questionnaires for the summative evaluation phase.

4.9 Summative evaluation phase

Summative evaluation is defined as "testing the effectiveness of the training program along predetermined criteria" (Lee & Mamone, 1995:272).

The focus of summative evaluation is to break new ground (Laurillard, 1994:291), differentiate between new training approaches, methods, techniques and technologies from other methods and define what unique contributions can be made.

Evaluation should ask whether whatever is being evaluated, is an appropriate use of technology (Folkers, 1994:310).

The purpose of summative evaluation is not to prove that students learn cataloguing better by doing it with different media and technologies. As Beattie (1994:56) points out, research has shown that the method of delivery does not affect learning. The same content could be delivered by any equivalent teaching methods. She, however, rightly states that research has also indicated that factors such as student control and self-pacing of learning benefit by computer-based instruction. The purpose of summative evaluation is to define what alternative media can offer in training rather than to demonstrate whether alternative media and technologies are better for training than traditional methods (Laurillard, 1994:291).

The needs analysis carried out actually performed a summative evaluation function. The training problem and needs were established. It was then determined how to correct the problem and the methodology for delivering the solution was developed.

The summative evaluation is therefore carried out when the programme is used in learning (Folkers, 1994:310).

The purpose of summative evaluation is to judge the effectiveness of the training.

The difference between formative evaluation and summative evaluation lies primarily in the scopes of the two techniques (Laurillard, 1994:292). Formative evaluation is used during the design and development of the programme in order to improve the design. Once the design is satisfactory, summative evaluation can be used to decide whether the programme contributes something new or unique. Through summative evaluation the researcher wishes to demonstrate what the best training course could be and what its potential uses are once it has been proven effective.

A questionnaire was designed to serve as a summative evaluation of a mix of media and technology training in cataloguing. (annexure C). Students' experiences of the following were determined:

- The cataloguing course in general
- The utilisation of printed study material
- Print-based practical exercises
- Electronic practical exercises
- Contact classes
- The mentor system
- E-mail communication
- TSA COOL
- A combination of the media and technologies

The same methods used for the formative evaluation of the computer program (discussed in chapter 3) were used to conduct the summative evaluation:

- Observations
- Interviews and formal discussions

- Focus groups
- Student questionnaires

4.10 Results

Only a few students had difficulty in using and accessing TSA COOL facilities. This low figure was surprising since the majority of students had never used online facilities or multimedia in their studies before. Difficulties were mainly due to incorrect personal computer settings and the network, which was "down" from time to time. These difficulties were quickly resolved when the students contacted their lecturer, tutor or the network administrator.

Detailed findings are provided in annexure F.

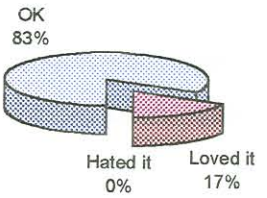
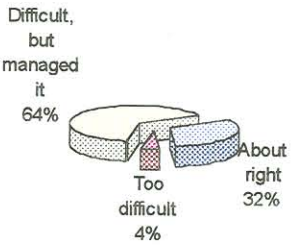
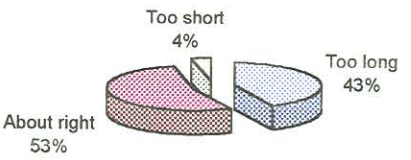
4.10.1 How did students find the cataloguing course in general?

Informal discussions with students and comments from students have created the impression that students consider the cataloguing course as the most difficult and time-consuming component of their training in Library and Information Studies. The researcher wanted to determine more formally how students experienced the course.

The following aspects were evaluated:

- How students liked the course
- How students experienced the difficulty of the course
- How students experienced the length of the course

Table 4.4: Experience of the cataloguing course in general

Aspect	Finding
How did students like cataloguing?	
How did students experience the difficulty of the cataloguing course?	
How did students experience the length of the cataloguing course?	

It is encouraging that the majority of students reacted positively to the course and managed it. A significant number of respondents found the course too long. However, owing to the nature of the course it is not possible to shorten it. The complete course has been spread over three years from introductory level (first year) to advanced level (third year).

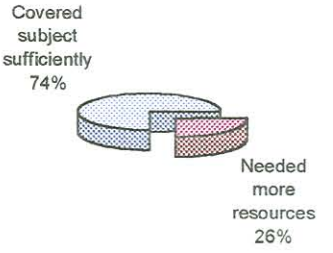
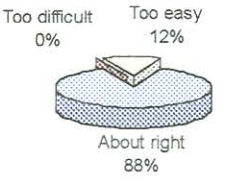
4.10.2 How did students experience the printed material?

Students are familiar with the printed course material, but have never had the opportunity to indicate how they experience it. Since printed course material forms an important part of the training resource programme, students' evaluation of it is considered important.

The following aspects were evaluated:

- Whether students believed that the printed material covered the course sufficiently or whether they felt that they needed more resources
- How students experienced the difficulty of the printed material

Table 4.5: Experience of printed material

Aspect	Finding
Did students believe that the printed material covered the course sufficiently or did they feel that they needed more resources?	
How did students experience the difficulty of the printed material?	

The respondents reacted positively to the printed material. A concern is, however, the fact that during interviews and informal discussions the majority of students admitted that they did not work through the printed study material. Possible solutions should be investigated further.

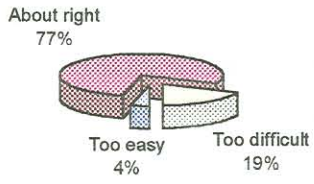
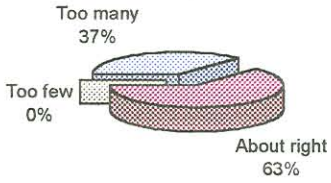
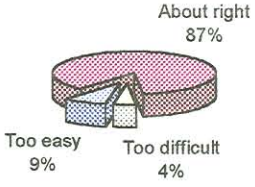
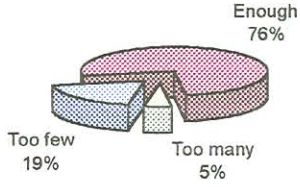
4.10.3 How did students experience the practical exercises related to the course?

Practical application is an essential aspect of the cataloguing course. Practical exercises, projects and learning activities are provided in the printed course material and computer program. Students' evaluation of them was regarded as essential in order to determine how the practical component could be improved in the future.

The following aspects were evaluated:

- How students experienced the difficulty of the practical exercises in the study guide and written assignments
- How students experienced the number of exercises in the study guide and written assignments
- How students experienced the difficulty of the practical exercises in the computer program
- How students experienced the number of exercises n the computer program

Table 4.6: Experience of practical exercises related to the course

Aspect	Finding
How did students experience the difficulty of the practical exercises in the study guide and written assignments?	
How did students experience the number of exercises in the study guide and written assignments?	
How did students experience the difficulty of the practical exercises on the CD-ROM?	
How did students experience the number of exercises on the CD-ROM?	

Generally the response to the practical exercises in both media (printed material and the CD-ROM) was positive.

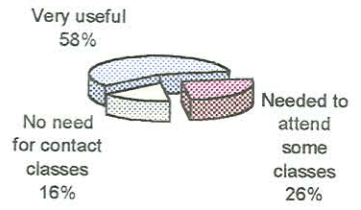
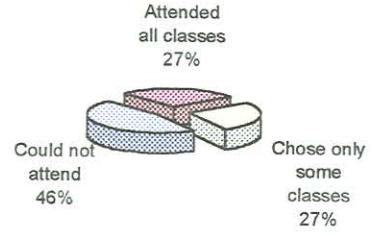
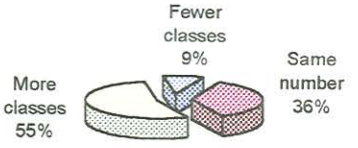
4.10.4 How did students experience the contact classes?

Contact or group discussion classes are held in Johannesburg and Durban (since the majority of students are in those areas). Students' requests have resulted in more classes being presented each year. The presentation of these classes has costs implications. It was therefore necessary to evaluate the classes as part of the training resource programme.

The following aspects were evaluated:

- How students experienced the availability of contact classes
- How many contact classes students attended
- How students felt about the number of contact classes that should be presented in the future

Table 4.7: Experience of contact classes

Aspect	Finding
How did students experience the availability of contact classes?	
How many contact classes did students attend?	
How did students feel about the number of contact classes that should be presented in the future?	

All the students who had been interviewed indicated that they needed contact classes. They do experience problems with transport and they cannot always attend classes since they also have to work over weekends. The poor attendance of classes is a concern. Some students admitted that they did not diarise classes or simply forgot about them.

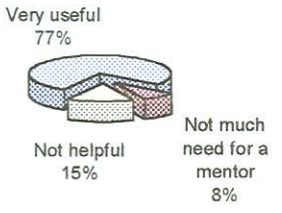
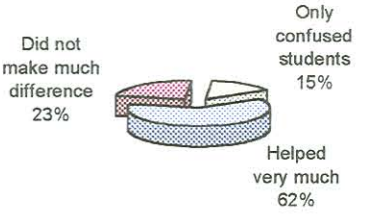
4.10.5 How did students experience the mentor system?

The mentor system has always been an important component of the experiential learning in Library and Information Studies. It has never been evaluated before and the researcher believes that is important to determine how the mentor system, as part of the training resource programme, contributes to the cataloguing course.

The following aspects were evaluated:

- How useful students found the mentor system
- How the direct interaction with a mentor helped students with their understanding of the course

Table 4.8: Experience of mentor system

Aspect	Finding
How useful did students find the mentor system?	
How did the direct interaction with a mentor help students with their understanding of the course?	

The mentor system is greatly appreciated by the students. However, it is not always possible to find a mentor who is a practising cataloguer. Some students felt that the mentors only confused them since they had a different opinion on some aspects of the subject. Mentors complained that students demanded a lot of their time and sometimes expected them to do their assignments for them. The administration of the mentor system is also very demanding.

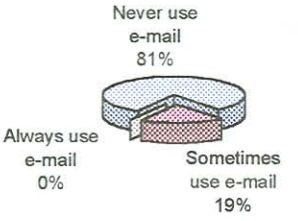
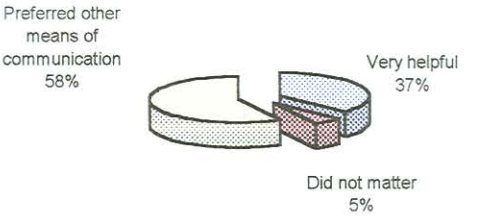
4.10.6 How did students experience e-mail communication?

Although facilities on the Internet, including e-mail as a communication channel, have been available to the students for about four years, it is the researcher's experience that only a small number of students use them. It was therefore necessary to determine how students experienced the facility as part of a training resource programme.

The following aspects were evaluated:

- How students used e-mail to communicate subject issues with the lecturer and fellow students
- How useful students found e-mail communication

Table 4.9: Experience of e-mail communication

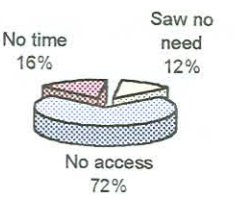
Aspect	Finding
How did students use e-mail to communicate subject issues with the lecturer and fellow students?	
How useful did students find e-mail communication?	

Only a few students communicate via e-mail. The majority prefer to use telephone calls, faxes and letters through the mail. Reasons for this given by the students were that they did not have e-mail facilities or that they were not allowed to use the e-mail at their places of work for private or study-related issues. They were, however, allowed to use the telephone and fax facilities for these issues (more costly). Those students who did use e-mail were pleasantly surprised at the quick responses and the fact that their documents did not get lost as is often the case with mailed material. It is necessary to educate students as well as their employers in the use and advantages of e-mail.

4.10.7 How did students experience the facilities on TSA COOL?

The question was phrased from a negative perspective ("why not" and not: "why do they use ...") since it was already clear from informal discussions with students that many did not make use of TSA COOL for different reasons. It was therefore necessary to determine what those reasons were in order to eliminate them in future.

Table 4.10: Experience of TSA COOL

Aspect	Finding
Why did students not use TSA COOL facilities?	

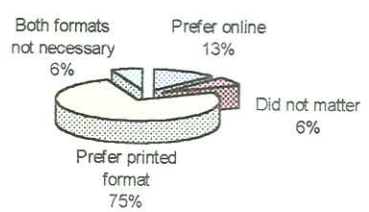
The availability of the virtual campus was widely promoted at the main campus as well as regional offices, but has not been used much by students. The reasons for not accessing the virtual campus were very much the same as for the non-use of e-mail. Although students were informed about the possibilities from where the Internet could be accessed, only a few used them. The general belief among the students was that if they do not have access at home or work, they do not have access at all. Students also indicated that they did not know how to access it and rather asked friends to do so on their behalf. Print-outs of relevant material would then be made. When it became clear that students were reluctant to access the virtual campus, questions and answers from previous examination papers were made available

on this site to attract students. The result was that many more students then wanted to access the virtual campus and did so. The same happened when their examination results became available on the virtual campus. When students accessed the facility for this information, they became aware of all the other facilities that had been made available and indicated that they were pleasantly surprised by it all. It therefore seems that initially it will be necessary to provide some attraction for students in order to persuade them to make use of all the online training facilities.

4.10.8 How did students experience online course material?

All the printed course material is also made available on the virtual campus and can be downloaded in PDF format. Since every student receives a set of printed study material after registration, there is no real need to download the material from the virtual campus.

Table 4.11: Experience of online course material

Aspect	Finding
Did students prefer to have their study guides and tutorial letters available online?	

The online availability of printed course material is only useful in cases where students lose their printed material (often the case with tutorial letters). Instead of requesting new material, paying for it and waiting

some time before eventually receiving it, students can download it immediately.

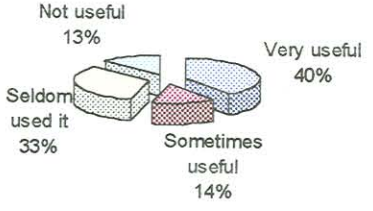
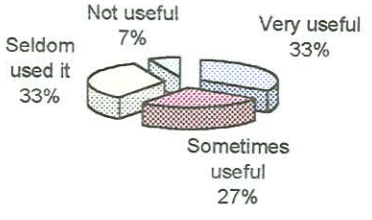
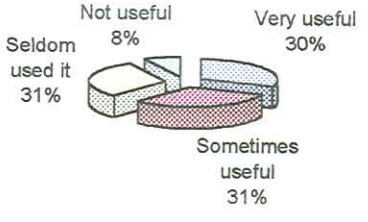
The other facilities on TSA COOL provide new, additional training opportunities for cataloguing students and it is important to determine students' response to those facilities as presented in the following sections.

4.10.9 How did students experience the academic guidance?

The following aspects were evaluated:

- How useful students found the academic guidance
- How useful students found the interactive exercises
- How useful students found the links to web sites of interest

Table 4.12: Experience of academic guidance

Aspect	Finding
How useful did students find the academic guidance (which includes interactive exercises, links to web sites, etc.)?	
How useful did students find the interactive exercises?	
How useful did students find the links to web sites of interest?	

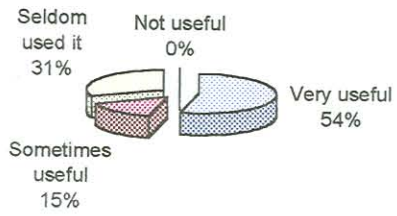
Since about a third of the respondents seldom used the academic guidance, there is a need to bring this particular facility to their attention. It provides them with additional training material as well as

more drill and practice exercises (already identified under research question 7 as a need).

4.10.10 How did students experience the online self-assessment?

The randomised online quizzes provide another opportunity for students to test their knowledge of the course and practise cataloguing. Students' experience of the facility had to be determined to decide whether it should be expanded.

Table 4.13: Experience of online self-assessment

Aspect	Finding
How useful did students find the online self-assessment?	

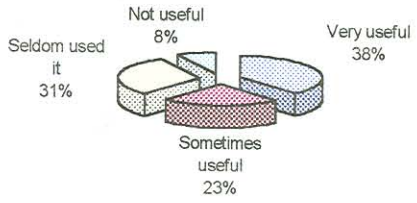
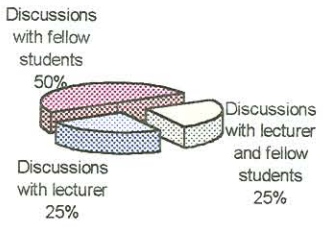
Since about a third of the respondents seldom used the online self-assessment, there is a need to bring this particular facility to their attention. It provides them with additional training material as well as more drill and practice exercises (already identified under research question 7 as a need).

4.10.11 How did students experience the online discussion groups?

The following aspects were evaluated:

- How useful students found the online discussion groups
- Main reasons why students used the online discussion groups

Table 4.14: Experience of online discussion group

Aspect	Finding
How useful did students find the online discussion groups?	
What were the main reasons why students used the online discussion groups?	

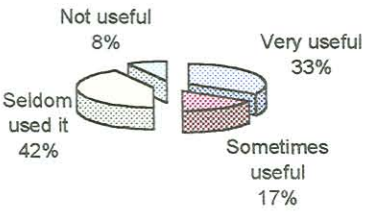
About a third of the respondents seldom used the facility. Again, it is necessary to promote this facility to the students. It provides an opportunity for them to communicate with each other as well as the lecturer about subject-related issues. From the requests that are

received from students to provide them with contact details of fellow students, it is clear that there is need for this communication forum.

4.10.12 How did students experience the frequently asked questions (FAQs)?

Since the FAQs provide answers to the questions students often ask, it was important to determine whether students used the facility and found it useful.

Table 4.15: Experience of FAQs

Aspect	Finding
How useful did students find the FAQs?	

This facility addresses many of the questions that students often phone about. Again, more than a third of the respondents indicated that they did not use this facility and it should therefore be promoted more.

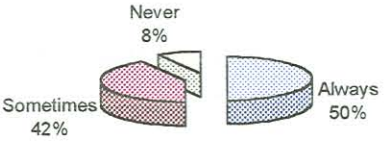
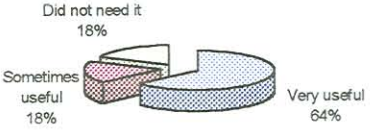
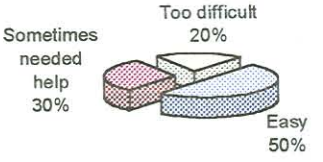
4.10.13 What were students' general reactions to TSA COOL facilities?

The following aspects were evaluated:

- Whether students would use TSA COOL facilities again in the future

- How useful students found the availability of online facilities as additional instructional methods for the cataloguing course
- How difficult students found the online facilities to use

Table 4.16: Students' general reactions to TSA COOL

Aspect	Finding
Would students use TSA COOL facilities again in the future?	
How useful did students find the availability of online facilities as additional instructional methods for the cataloguing course?	
How difficult did students find the online facilities to use?	

At first students only wanted to access the virtual campus for help in preparing for examinations and getting examination results. Once they

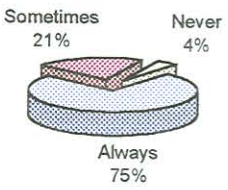
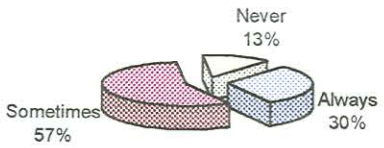
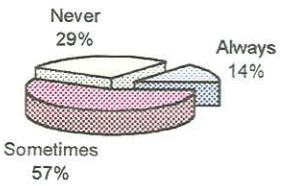
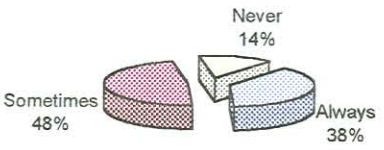
had become aware of the other facilities, they reacted positively to TSA COOL and indicated that they found it very useful and would use it again.

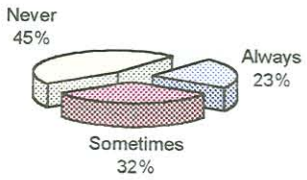
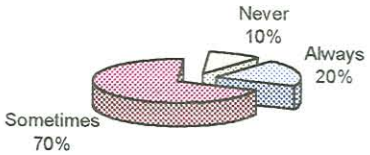
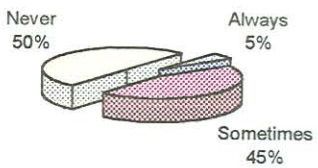
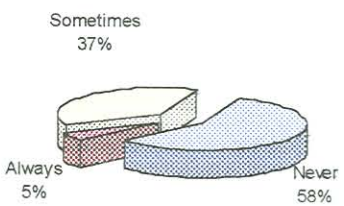
4.10.14 How did students experience a combination of a mix of media and technologies?

The following aspects were evaluated:

- Whether students preferred to use only the printed study guide, tutorial letters and prescribed books
- Whether students also used other reference sources in printed and electronic form
- Whether students also used e-mail, telephone and fax communication with their lecturer and other students
- Whether students also relied a lot on their mentor for help
- Whether students also attended the contact classes
- Whether students also used the computer program for classification training
- Whether students also used the computer program, e-mail and TSA COOL
- Whether students also used the computer program, e-mail, TSA COOL and attended contact classes

Table 4.17: Experience of a combination of media and technologies

Aspect	Finding
Did students prefer to only use the printed study guide, tutorial letters and prescribed books?	
Did students also use other reference sources in printed and electronic form?	
Did students also use e-mail, telephone and fax communication with their lecturer and other students?	
Did students also rely a lot on their mentor for help?	

Aspect	Finding
Did students also attend the contact classes?	
Did students also use the computer program for classification training?	
Did students also use the computer program, e-mail and TSA COOL?	
Did students also use the computer program, e-mail, TSA COOL and attended contact classes?	

It was clear that students showed a high preference for printed materials, the mentor system, contact classes and direct

communication with the lecturer. They enjoyed experimenting with the new media.

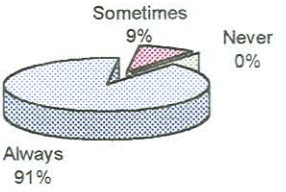
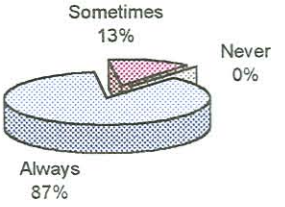
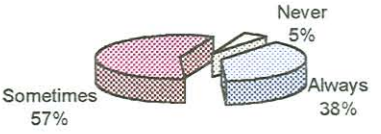
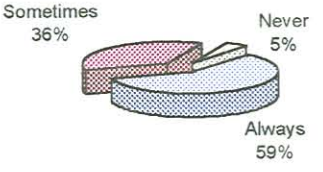
4.10.15 Which of the following media and technologies would students use in future again?

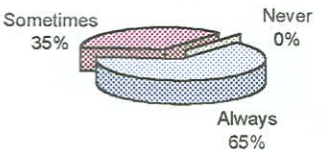
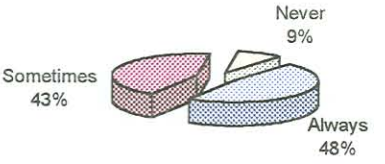
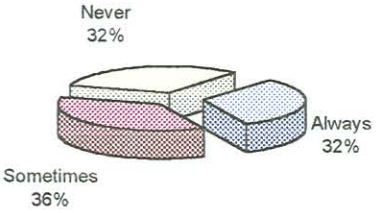
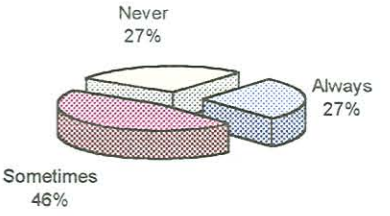
The researcher had to determine which of the media and technologies students preferred in order to expand those technologies. The media and technologies not preferred should be revisited to determine why students do not want to use them in the future and how improvements could be made.

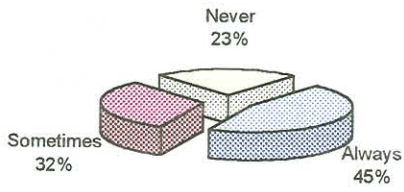
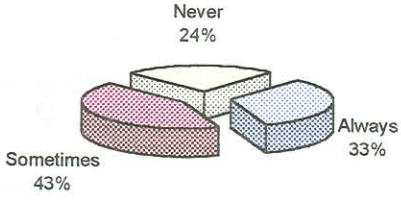
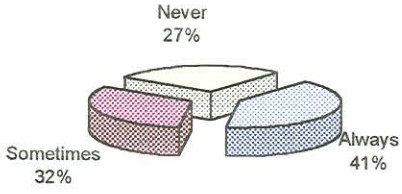
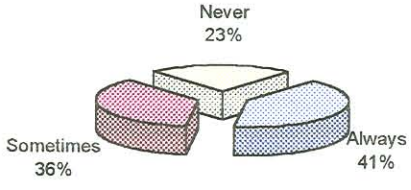
The following aspects were evaluated:

- Whether students would use printed material again
- Whether students would use printed practical exercises again
- Whether students would use practical exercises in the computer program again
- Whether students would make use of contact classes again
- Whether students would use the mentor system again
- Whether students would use telephone and fax facilities again
- Whether students would use e-mail again
- Whether students would use online discussion groups again
- Whether students would use online study guides and tutorial letters again
- Whether students would use online academic guidance again
- Whether students would use online self-assessment again
- Whether students would use FAQs again

Table 4.18: Future use of media and technologies

Aspect	Finding
Would students use printed material again?	
Would students use printed practical exercises again?	
Would students use practical exercises in the computer program again?	
Would students make use of contact classes again?	

Aspect	Finding
Would students use the mentor system again?	
Would students use telephone and fax facilities again?	
Would students use e-mail again?	
Would students use online discussion groups again?	

Aspect	Finding
Would students use online study guides and tutorial letters again?	
Would students use online academic guidance again?	
Would students use online self-assessment again?	
Would students use FAQs again?	

Students would like to use all the training facilities again. The well established media and technologies with which they are more familiar,

such as printed course material, the mentor system, faxes, telephones and direct personal communication and contact classes, are the most preferred components. The other media and technologies such as the computer program and virtual campus are not as popular yet.

During the interviews and discussions students indicated the following as reasons why they would not always make use of all the facilities:

- Time constraints: The nature of the cataloguing course meant that the course itself took up a lot of their time. There was not always enough time to use all the training facilities.
- Access: Not all the students had access to all the facilities.

These issues need to be investigated further to determine how students could benefit more from all the media and technologies in the resource training programme.

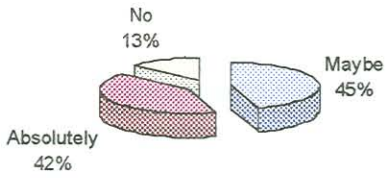
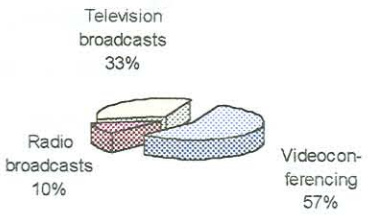
4.10.16 Would students like to receive instruction by means of a mix media and technologies?

Since there are also other media and technologies available, students' feelings towards using these facilities were also determined.

The following aspects were evaluated:

- Whether students would like to receive instruction in the form of a mix of media and technologies
- Whether students would like videoconferencing, television broadcasts and radio broadcasts for instruction

Table 4.19: Receive instruction by means of media and technologies

Aspect	Finding
Would students like to receive instruction in the form of a mix of media and technologies?	
Would students like videoconferencing, television broadcasts and radio broadcasts for instruction?	

Videoconferencing could be used to reach students during contact classes in regions other than Johannesburg and Durban. Television broadcasts are not used yet, but are considered a future possibility. Further research will have to be conducted to determine exactly how a cataloguing course could be presented with these media.

4.11 Summary

This chapter described the design, development, implementation and evaluation of the training resource programme for cataloguing students.

The goal of this chapter was to report on the investigation into the instructional and motivational effectiveness of a mix of media and technologies for the training of cataloguing students.

Students expressed positive responses to the programme and its value in their learning of cataloguing. The results clearly indicate that they appreciated the opportunity to utilise a combination of media and technologies. However, they still indicated a preference for printed material and direct contact with the lecturer and fellow students.

It has been determined that the training resource consisting of a mix of media and technologies is effective, both instructionally and motivationally.

4.12 Recommendations

This investigation has demonstrated that the overall effect or outcome of the evaluation was positive.

With reference to the specific research questions under investigation in this chapter, the recommendations are summarised as follows:

Table 4.20: Summary of recommendations

NO.	QUESTION	ASPECT	RECOMMENDATION
9	What developments have taken place in the utilisation of a mix of appropriate media and technologies in training cataloguers?	New development	Maintain and refine existing media and technologies
10	What are the advantages and disadvantages of training cataloguers by means of a mix of media and technologies?	Advantages and disadvantages as experienced by students	**Advantages** ➢ Motivation ➢ More practice opportunities ➢ Interactivity ➢ Enjoyment **Disadvantages** ➢ Students have to get used to the new media before they can focus on the content ➢ Things can go inexplicably wrong with technology ➢ Not all students have access to all the facilities ➢ A lot of help and guidance need to be included in the development ➢ Students regard the different media as separate entities and do not use them in conjunction with other training

NO.	QUESTION	ASPECT	RECOMMENDATION
			materials and media
11	How should training by means of a mix of media and technologies be designed to serve as an appropriate training mode?		Simplicity should be maintained. Media and technologies should be included but should be utilised as an integrated whole

In chapter 5 the results from the analysis of the reported research and evaluations of the training resource programme will be integrated to answer the research questions.