



## CHAPTER 3

### ***DESIGN, DEVELOPMENT AND PRODUCTION***

	<b>Page</b>
<b>3.1 Overview</b>	<b>71</b>
<b>3.2 Introduction</b>	<b>73</b>
<b>3.3 Stage 1: Analysis</b>	<b>73</b>
3.3.1 Purpose of the analysis	74
3.3.1.1 <u>Goal analysis</u>	74
3.3.1.2 <u>Target population analysis</u>	74
3.3.1.3 <u>Task analysis</u>	75
3.3.1.4 <u>Information analysis</u>	75
3.3.1.5 <u>Media analysis</u>	76
3.3.1.6 <u>Project analysis</u>	76
3.3.2 Limitations of the research project	76
3.3.3 Analysis method	77
3.3.3.1 <u>Interviews</u>	78
3.3.3.2 <u>Research diary</u>	79
3.3.3.3 <u>Focus groups</u>	79
3.3.3.4 <u>Questionnaires</u>	79
3.3.3.5 <u>Literature review</u>	80
3.3.4 Sample	80
3.3.5 Instrumentation	80
3.3.5.1 <u>Questionnaire to potential students</u>	80
3.3.5.2 <u>Questionnaire to enrolled students</u>	81
3.3.6 Results of the needs analysis	81
3.3.6.1 <u>Goal analysis</u>	81
3.3.6.2 <u>Target analysis</u>	82
3.3.6.3 <u>Task analysis</u>	86
3.3.6.4 <u>Information analysis</u>	87
3.3.6.5 <u>Media analysis</u>	87
3.3.6.6 <u>Project analysis</u>	87
<b>3.4 Stage 2: Design</b>	<b>88</b>
3.4.1 Introduction	88
3.4.2 Objectives	89
3.4.3 Considerations taken into account during design	90
3.4.3.1 <u>Delivery system</u>	90
3.4.3.2 <u>Content and layout</u>	91
3.4.3.3 <u>Text design</u>	92
3.4.3.4 <u>Screen design</u>	93
3.4.3.5 <u>Navigation</u>	94
3.4.4 Design specifications as applied in this project	94



		<b>Page</b>
<b>3.5</b>	<b>Stage 3: Development</b>	<b>99</b>
3.5.1	Introduction	99
3.5.2	Storyboarding	99
3.5.3	Authoring tool	100
3.5.4	Formative evaluation	101
3.5.5	Development of the prototype	102
3.5.5.1	<u>Phase 1</u>	102
3.5.5.2	<u>Evaluation of phase 1</u>	103
3.5.5.3	<u>Phase 2</u>	103
3.5.5.4	<u>Evaluation of phase 2</u>	105
3.5.5.5	<u>Phase 3</u>	105
3.5.5.6	<u>Evaluation of phase 3</u>	106
3.5.5.7	<u>Phase 4</u>	106
<b>3.6</b>	<b>Production</b>	<b>109</b>



## CHAPTER 3

### ***DESIGN, DEVELOPMENT AND PRODUCTION***

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#### **3.1 Overview**

This chapter describes the design, development and production of the product, which is a functional web site to serve as a tool for marketing purposes and to provide effective communication facilities. The success of the web site depends on the choices made during the design and development phases.

"Never begin a multimedia product without first outlining its structure and content. Design is thinking, choosing, making and doing." Vaughan (1998:463)

A thorough needs assessment is conducted. A needs assessment or "front - end analysis" is the product of the analysis phase where the answers to the questions in Table 3.1 below, is essential. It is imperative to ascertain exactly what the client's needs are and whether the product in mind will fulfil the need.

Table 3.1 displays the interpretation of the researcher regarding the five basic questions of a needs assessment according to Main cited by Hodgkinson & Cronje.(1999)

**Table 3.1 Five basic questions for a needs assessment**

Main cited by Hodgkinson & Cronje	Interpretation of the researcher to suit the specific research need
Why is the instruction needed? (Goal)	Why should the product be developed?
Who is it that needs the instruction? (Target population)	Who will use the product?
What is it they need to know or do or feel? (Content)	What should the product be able to do? (Information)
Where will the instruction take place?	Where should the product be available, once it is completed?
When is the instruction to be conducted?	How will the product be marketed?

The researcher approached the needs assessment stage according to the development and design models described by Allesi & Trollip, (1991:245-248), Reeves, (1994) and guidelines by Vaughan, (1998:495)

The research questions explained in Chapter 1, include the following issues and will be born in mind in the course of this chapter:

- Information needs.
- Design issues.
- Marketing issues.
- Communication issues.

An overview of the different stages in the development process is displayed in Table 3.2. The different activities, which are relevant in each stage of the development process, as well as the output of each activity, are displayed.

**Table 3.2 Different stages in the development process**

Stages	Activities	Output
<b>Analysis</b>	Goal	<ul style="list-style-type: none"> <li>▪ Build a web site to serve as a functional marketing tool.</li> <li>▪ Create effective communication channels</li> </ul>
	Target	<ul style="list-style-type: none"> <li>▪ Target group specification</li> <li>▪ Target group needs</li> </ul>
	Task	<ul style="list-style-type: none"> <li>▪ Attract visitors to the site, maintain interest</li> <li>▪ Create a facility to enhance communication</li> </ul>
	Information	<ul style="list-style-type: none"> <li>▪ Provided by the client</li> <li>▪ Presentation of the above information in manageable chunks</li> </ul>
	Media	<ul style="list-style-type: none"> <li>▪ Use of text, graphics, animation</li> </ul>
	Project	<ul style="list-style-type: none"> <li>▪ Involved parties in project</li> <li>▪ Outline of project</li> </ul>

(Reeves, 1994)



**Table 3.2 (continued)**

Stages in process	Activities	Output
<b>Design</b>	<ul style="list-style-type: none"> <li>▪ Objectives</li> <li>▪ Specifications</li> <li>▪ Delivery system</li> <li>▪ Flowcharting</li> </ul>	<ul style="list-style-type: none"> <li>▪ Functional marketing tool.</li> <li>▪ Functional communication facility.</li> <li>▪ As discussed in literature review. (Chapter.2)</li> <li>▪ As decided upon by clients &amp; researchers.</li> <li>▪ WWW, Internet and CD.</li> <li>▪ Formatting of screens.</li> <li>▪ Series of diagrams.</li> </ul>
<b>Development</b>	<ul style="list-style-type: none"> <li>▪ Program editor</li> <li>▪ Storyboarding</li> <li>▪ Prototype</li> <li>▪ Formative evaluation</li> </ul>	<ul style="list-style-type: none"> <li>▪ <i>Dreamweaver</i></li> <li>▪ Preparation of text and images.</li> <li>▪ Paper and pencil sketching</li> <li>▪ Creating the product</li> <li>▪ Constant evaluating throughout the development stage</li> <li>▪ Formal testing by means of questionnaires</li> </ul>
<b>Production</b>	<ul style="list-style-type: none"> <li>• Creating web site</li> </ul>	<ul style="list-style-type: none"> <li>• Prototype available for evaluation</li> </ul>

### 3.2 Introduction

The researcher used the development model of Reeves (1994) and the process model of Vaughan (1998:430) in the design and development phase of this prototype.

Each stage in the development process of the web site is discussed in detail.

### 3.3 Stage 1: Analysis

During the analysis stage the following is addressed:

Purpose of the analysis

Limitations in the research

Analysis methods

Instruments used

- Sample
- Results of the analysis

The outcome of the needs analysis was used to design and develop a web site to serve as a marketing tool for the **Program** and to create a functional communication facility.

### 3.3.1 Purpose of the analysis

The purpose of each analysis was the following:

#### 3.3.1.1 Goal analysis

Before attempting to start the design phase of the product, it is important to obtain agreement from all the parties involved regarding the intended outcome (terminal goal). To enable the team to write clear performance objectives, a thorough goal analysis is imperative. (Alessi & Trollip, 1991:252; Reeves, 1994)

A goal analysis was performed to establish:

- In what way the marketing of the **Program** is currently conducted and whether the existence of a web site will be an asset.
- How communication is currently taking place and whether facilities via the WWW will promote and increase communication with regard to the different parties involved with the **Program**.

#### 3.3.1.2 Target population analysis

An investigation of the population is necessary to determine how the product should be structured and to decide on appropriate techniques, information and approaches to achieve the best results. (van Dyk, Nel & Loedolff, 1992:167)

Therefore an analysis of the target population was performed to establish:

- exactly who the users of the finalised product will be,
- what the specific needs of the different groups are (e.g. location, language, interests);  
and

- what the general level of computer literacy and accessibility to the WWW of the total population is.

#### 3.3.1.3 Task analysis

According to Alessi & Trollip, (1991:278-280) one should begin with the terminal skills/activity needed, break it down into component skills/activities and eventually reach a collection of skills/activities necessary to perform a task.

It is also necessary to provide a comprehensive description of the task and determine the criterion of acceptable performance. (Hodgkinson & Cronje , 1999:10)

As this product has to serve as marketing and communication tool, the aim of this task analysis was to establish:

- a starting point for the development of an interactive web site as a marketing tool and a means of communication,
- an efficient sequencing of the information, and
- different channels for functional communication.

#### 3.3.1.4 Information analysis

Information is essential when making decisions during the design process. It has no value in itself and should lead to human action, whether it is to assist a person in performing a job, solve a problem or pursue an interest. Too much information on the other hand can cause confusion and may lead to information overload. (Coetzee, 2000:11-12)

Although the client supplied the content, an information analysis was conducted as well to establish:

- An appropriate manner in which to present the information in order to enhance the marketability and keep the user interested.

#### 3.3.1.5 Media analysis

Different media have varying possibilities and limitations. The challenge, therefore, is to make the right choices. (Hodgkinson & Cronje, 1999:12).

In order to make the right choices, a media analysis was conducted to establish:

- which combination of text, hypertext, images, animation, sound, video etc. would be suitable and cost effective; and
- which combination would be functional for the specific need.

#### 3.3.1.6 Project analysis

A project analysis was conducted to establish the rolls of al the parties involved in the design and the development phases of this project and to gather information with regard to the processes involved in the design and development stages of the product.

### 3.3.2 **Limitations of the research project**

The project was designed, developed and implemented by the researchers, which meant a great deal of studying and research had to be done before every phase in the development process. A great deal of learning on the researchers' side occurred by means of trial and error. This resulted in a time-consuming effort.

No funding for the project was available. The researchers were responsible for any financial output.

The **Program** was in the midst of a total structure change. Until the beginning of this year (2000) it was part of Home Economics, but currently resorts under the School of the Built Environment. Because of the different perspectives of the other departments, Architecture and Landscape Architecture, the project was put on hold for a while. The other departments are also in need of web sites and have to link directly to this site. Therefore the parties involved also needed to give input.

The client periodically had to go away on business. Regular meetings and discussions were difficult to schedule.



The **Program** has a limited number of students and at the time of the handing out of the evaluation questionnaires most of them were on their way to a seminar in Cape Town. This resulted in a frantic attempt to get the questionnaires completed.

The desired communication facilities (listserv, e-mail and bulletin board) were not functioning, because the evaluation was conducted from stippy and CD. No Internet connection was available.

### 3.3.3 Analysis method

The analyses were done by means of triangulation where information was gathered via different needs assessment tools. (Reeves, 1994). Triangulation enhances and enforces the validity of the research project. (Mouton & Marais, 1996)

The analysis instruments used, are displayed and indicated in the Table 3.3.

**Table 3.3 Data collection methods**

Analysis & related questions	Interview	Research Diary	Questions	Focus group	Literature review
<b>Goal analysis</b>					
▪ How should a web site be structured to serve as a functional marketing tool?	✓	✓	✓	✓	✓
▪ Which communication facilities will enhance communication?	✓	✓	✓	✓	✓
<b>Target analysis</b>					
▪ Who is the target population?	✓		✓	✓	
▪ What are their needs?	✓		✓	✓	
<b>Task analysis</b>					
▪ How can visitors be attracted to the site?		✓	✓		✓
▪ How can communication be enhanced?		✓	✓		✓
<b>Information analysis</b>					
▪ How should information be presented to promote marketability?		✓		✓	✓
<b>Media analysis</b>					
▪ Which media instruments should be used?	✓	✓			✓
<b>Project analysis</b>					
▪ Who are the parties involved in the project?	✓			✓	
▪ How should the product be designed and developed?					✓

A description of each analysis instrument, mentioned in Table 3.3 follows:

### 3.3.3.1 Interviews

During the initial stages of the needs analysis regular meetings were scheduled with the Head of the **Program** (the client). These interviews were of an informal nature and no specific questionnaires were applicable, although the aim was to get answers to specific questions regarding the project.

The following issues were discussed:

- Current ways of marketing the **Program**.
- Communication facilities available.
- Different needs for a web site.
- Specifications with regard to the product.
- The target population.
- Needs regarding the target population.
- Content specifications.
- Numerous ideas regarding the 'look and feel' of the product.

Informal interviews with the client and fellow lecturers occurred during the development process and served as formative evaluation sessions.

Individual interviews with enrolled students in different years of study occurred in an informal manner, where all the students expressed a definite need for a communication facility as well as the need for a web site to provide exposure to the **Program**.

During the open day of the university, potential students and parents were interviewed and the need for a web site to fulfil various needs became apparent.

All the information gathered by means of these informal interviews was recorded in the research diary.

### 3.3.3.2 Research diary

The researchers kept a diary to keep track of all the discussions, work sessions, informal meetings, the focus group gathering and interviews, that took place. Changes and refinements made during the development process as well as suggestions made by the client via e-mail were recorded. This diary proved to be of great value.

### 3.3.3.3 Focus groups

A formal group session was scheduled with the representatives of the different departments in the School of the Built Environment where the prototype was discussed in terms of general structure and layout. This session was not structured by a specific list of prepared questions. Therefore an open discussion, which was recorded in the research diary, took place.

Informal group discussions with smaller groups of students were organised to establish their needs and the general feeling regarding a web site for their use.

### 3.3.3.4 Questionnaires

Two questionnaires were handed out at different periods of the development phase.

- The first questionnaire was completed at the open day at the initial stage of the project. Yes/No options, as well as open-ended questions were applicable and information gathered, gave answers to computer literacy and general background. The data was analysed by the researchers. **(Appendix A)**
- The second questionnaire was of a more formal nature and was compiled according to the standards of the Department of Statistics. The questions, mostly multiple choice, were grouped in 4 different sections and covered all the specific data needed for a thorough analysis with regard to the target population. This included general background information, computer literacy, communication - and marketing issues **(Appendix B)**



### 3.3.3.5 Literature review

A thorough literature research was done to collect information regarding the WWW, multimedia, design principles, marketing strategies and communication issues. The research was conducted to ensure the design and development of a functional and workable web site to fit the specific needs of the client.

### 3.3.4 **Sample**

In order to gather useful information in the analysis phase, a specific analysis instrument was chosen and applied to a specific people. The samples involved in the analyses are displayed in Table 3.4.

**Table 3.4 The different samples involved in the analyses**

Method of analysis	Sample
Interview	<ul style="list-style-type: none"> <li>▪ Head of the <b>Program.</b> ( client)</li> <li>▪ Lecturers involved in the <b>Program.</b></li> <li>▪ Students in the different years of study.</li> <li>▪ Potential students.</li> <li>▪ Parents of potential students.</li> </ul>
Focus group	<ul style="list-style-type: none"> <li>▪ Representatives of each Department in the School of the Built Environment Architecture, Landscape Architecture and the <b>Program.</b>)</li> <li>▪ Enrolled students in the <b>Program.</b></li> </ul>
Questionnaires	<ul style="list-style-type: none"> <li>▪ Potential students.</li> <li>▪ Enrolled students in different years of study.</li> <li>▪ Lecturers.</li> <li>▪ CBT students.</li> <li>▪ Experts.</li> </ul>

### 3.3.5 **Instrumentation**

Questionnaires were the only formally structured instruments used during the analysis phase. Each questionnaire is discussed briefly.

#### 3.3.5.1 Questionnaire to potential students on the Open Day

The aspects addressed in this questionnaire are the following:

- Personal information.
- Educational background.

- Geographical & cultural information.
- Computer literacy/skills.
- Marketing issues.

Information regarding the target population was gathered by means of this convenience sampling. **(Appendix A)**

#### 3.3.5.2 Questionnaire to enrolled students.

The aspects addressed in this questionnaire are the following:

- General information.
- Communication facilities.
- Computer literacy and use.
- Internet use.

These questions were formulated to obtain more specific information regarding the target population and were structured as follows:

- Multiple choice.
- Yes / No.
- Prioritise on a scale from 1 to 5 (where 1 =least frequent and 5 = most frequent)

**(Appendix B.)**

#### 3.3.6 **Results of the needs analysis**

##### 3.3.6.1 Goal analysis

Questions applicable in this analysis were the following:

- How is the marketing currently conducted?
- Is there a need for a market strategy?
- How is communication currently taking place?
- Is there a need for a communication facility?

Answers to the above questions were provided by the results from the questionnaires as well as the interviews.

**Marketing** is currently conducted through networking by means of exhibitions, promotions at schools and personal contact (word of mouth). A web site would be a great asset, especially if links to and from the professional institutes (Design Southern Africa, IFI, DEFSA, Design Institute of the SABS and the CSIR) could be established.

The decision was made to provide a general "links" page, where any design and industry-related company and organisation, can place their logo as an active external link. A page of this nature will enable a person to find appropriate services and professional assistance on various aspects concerning design issues.

Communication is currently taking place by means of telephonic conversations and the e-mail facility provided by the University server. Because of the dynamic nature of the industry, immediate responses are of the utmost importance. A web site has the facility to provide immediate visual models and progress with regard to projects.

By means of a listserv a specific group (scattered all over the world) will have constant contact. A bulletin board will provide members of different groups a facility of sharing ideas and suggestions. (E.g. students, lecturers from different design institutions and professionals busy on a project)

#### 3.3.6.2 Target analysis

Two groups of respondents were used to complete the two different questionnaires:

- potential students at the University open day; and
- enrolled students in different years of study.

Both groups were used, because of their different perspectives. The potential product should be beneficial to both groups.

The results of the target population analysis are displayed in Table 3.5.





**Table 3.5 Target population profile**

Issues	Variables	First questionnaire		Second questionnaire	
		Potential Students		Enrolled students	
Target group		20		25	
Questionnaires completed.		Nr.	%	Nr.	%
Age.	Under 18	15	75	0	0
	Above 18	5	25	25	100
Gender.	Male	9	45	5	20
	Female	11	55	20	80
Language preference.	Afrikaans	10	50	15	60
	English	7	35	10	40
	Sepedi	1	5	0	0
	German	2	10	0	0
Read & write English.	Yes	20	100	25	100
Demographics.	Gauteng	14	70	18	72
	North West	3	15	4	16
	Namibia	1	5	0	0
	Northern Province	0	0	1	4
	Mpumalanga	0	0	1	4
	Free State	2	10	0	0
	Botswana	0	0	1	4
Accommodation.	House	11	55	15	60
	Flat	4	20	2	8
	Rented room	0	0	2	8
	Varsity residence	5	25	6	24
Computer literacy.	Excellent	10	50	2	8
	Good	6	30	14	56
	Average	4	20	7	28
	Poor	0	0	2	8
Computer access.	Yes	20	100	25	100
Internet connection.	Yes	13	65	21	84
	No	7	35	4	16
Information about Program?	Posters	6	30	Not applicable for this group	
	Word of mouth	3	15		
	School	11	55		
	Internet	0	0		
Current means of obtaining information for research topics.	Library	9	45		
	Magazines	8	40		
	Internet	11	55		
Obtain information on a subject on Internet by means of the following:	Surfing	5	25	13	52
	Search engine	13	65	21	84
	Trial & error	8	40	15	60
	Specific address	16	80	22	88
Purpose of Internet use.	General info seeking	14	70	12	48
	Specific info seeking	15	75	21	84
	Communication	12	60	12	48
	Surfing	11	55	13	52
Program needs a web site.	Yes	18	90	25	100
	No	2	10	0	0

Figure 3.1 to Figure 3.4 graphically display selected information on specific issues regarding the two different target groups indicated in Table 3.5.

**Figure 3.1 Language abilities and preferences**

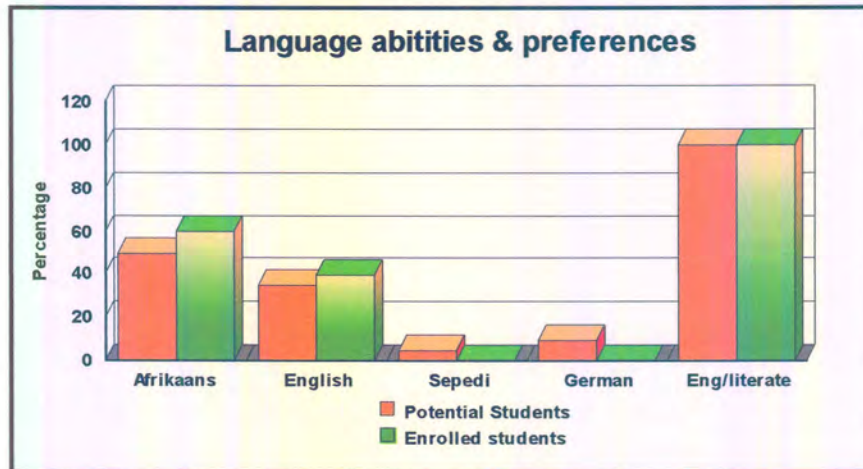


Figure 3.1 reveals that, even though different languages groups were present, the English proficiency in the total group was 100%. Therefore a web site in English will suffice.

**Figure 3.2 Demographic results of the two target groups**

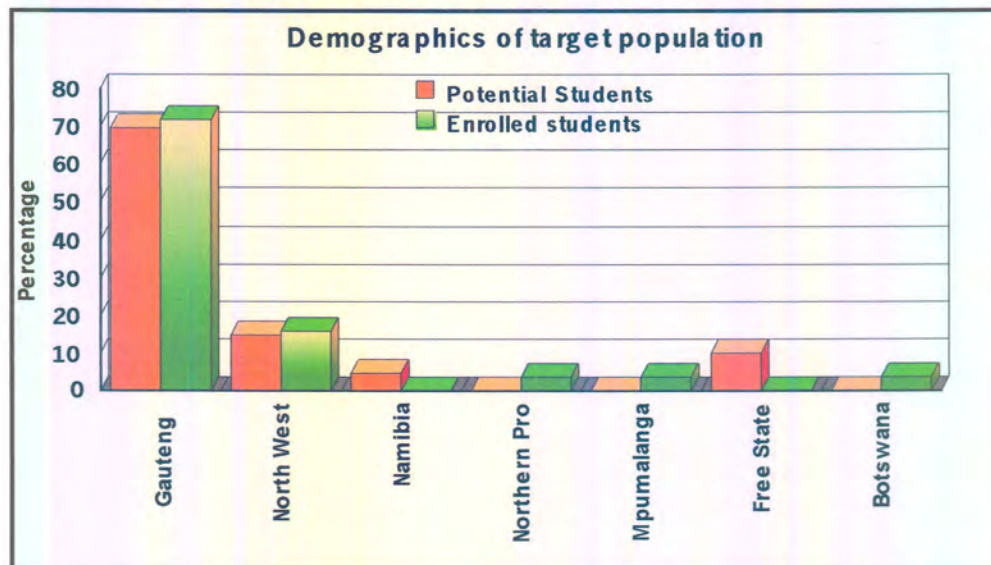


Figure 3.2 reveals that students enrol from different regions and this fact allows for the assumption that communication and information via a web site would be of value to all the parties involved in the Program.



**Figure 3.3 Computer literacy of the two target groups (†)**

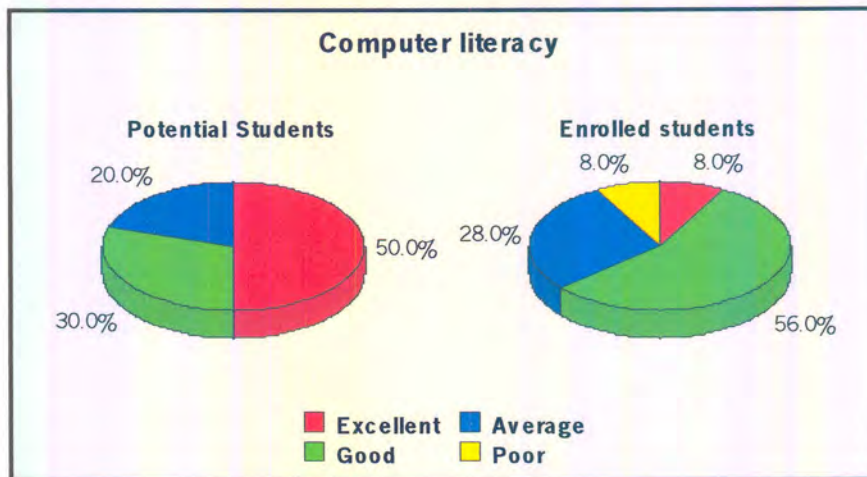


Figure 3.3 reveals that the majority of the total group has an above average knowledge of the computer, which would prove to be an asset where the use of a web site is concerned.

**Figure 3.4 Substantial factors regarding the total target group**

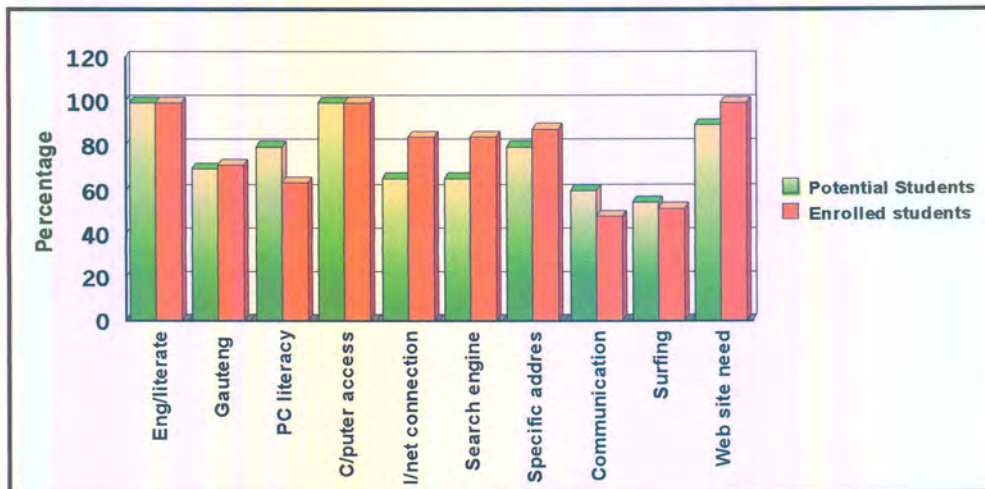


Figure 3.4 reveals the most important results of the total target population during the analysis phase. The following issues appearing in Figure 3.4 are discussed briefly:

- English literate: The web site in English will be sufficient, as the results show that the total target group can read and write English.
- Gauteng: Even though the majority of the target group lives in Gauteng, learners from other areas within South Africa also enrol in the **Program** at the University of Pretoria



Demographics have to be considered for future purposes. Therefore a web site with all the attributes (e.g. communication facilities, marketing facilities and information service) will be a useful 'tool'.

- Computer literacy: The above results portray an above average computer knowledge, which is important when doing 'business' on the Internet.
- Computer access: The total group has access to a computer, whether at home, residence or at the university.
- Internet connection: The majority of the target group has Internet connection, which makes the access to a web site or communication facility within reach. The total target population has access to a computer. To obtain an Internet connection would probably not be an issue at all, especially because more and more research will have to be conducted via the Internet. (Research diary)
- Search engine & specific address: The above results reveal that 75% of the group already use the search engine and 84% a specific address, to obtain information on the Internet/WWW. The target group as a whole has knowledge of the modern technology of the WWW. The results also reveal that the group prefers using the WWW to paper-based material.
- Communication & surfing: Even though the results regarding communication (58%) and surfing the web (50%), are not phenomenally high, they reveal that the group use and have knowledge of the WWW. A specific web site with communication facilities for their exclusive use will be beneficial and functional.
- Web site need: A definite need for a web site for the Program exist, as revealed by the results. All the above-mentioned issues, together with the final 95% vote for a site, prove that the total target population agrees on a site for all the various reasons.

The challenge now lies in producing a site to suit all the needs. It has to be functionally as well as aesthetically accepted by the client as well as the group.

### 3.3.6.3 Task analysis

The questions applicable in this analysis are the following:

- How should a web site be developed to achieve optimal marketing features?
- How can functional communication be ensured?

Answers to the above questions were provided by information gathered during interviews and the focus group session.

Table 3.6 displays the task analysis results.

**Table 3.6 Task analysis results**

Analysis issue	Result
<b>Marketing</b>	<ul style="list-style-type: none"> <li>▪ Use of different colours.</li> <li>▪ Establish professional links.</li> <li>▪ Create a general <b>links</b> page.</li> <li>▪ Enable search engine capabilities.</li> </ul>
<b>Communication</b>	<ul style="list-style-type: none"> <li>▪ Provide e-mail facility on each page.</li> <li>▪ Provide a listserv facility.</li> <li>▪ Provide a bulletin board facility.</li> <li>▪ Provide space for exhibition of current projects.</li> </ul>

#### 3.3.6.4 Information analysis

The client supplied the information, which was recorded in the research diary and the presentation thereof was done in accordance to information from the literature as well as the design specifications discussed in Chapter 1.

#### 3.3.6.5 Media analysis

Information regarding the use of text, hypertext, graphics and animation was gathered during the interviews with the Head of the **Program** and fellow lecturers as well as input from the focus group session.

To satisfy the specific need of the target population and ensure proper marketability the decision was made to keep it straight and simple, yet functional. (Schwier & Misanchuk, 1993) The client settled for text, hypertext and graphics relevant to the **Program**.

Animation might be used to capture attention in certain instances, for example on the Home page. It might however, not feature during the development of the prototype, but will be implemented when projects are placed on the site and when a further need for animation arises.

#### 3.3.6.6 Project analysis

Questions applicable in this analysis:

- Who are the different parties involved in the decision-making?
- What should the project look like?

The Head of the **Program** provided some of the answers to the above questions during the initial interview. After the change of structure within the different departments, the representatives from the different departments gave their input during the focus group session.

The parties involved included the following:

- The Head of the **Program**,
- A fellow lecturer at the **Program**
- A representative of each department within the School of the Built environment,
- The two developers.

### **3.4 Stage 2: Design**

#### **3.4.1 Introduction**

Screen design comprises of a multitude of concerns of which technical issues such as choice of fonts, length of text lines, amount of white space and structural issues such as writing style and textual structure are only two obvious elements.

(Schwier & Misanchuk, 1993; 209)

Table 3.7 displays comments from the following authors, Shneiderman, (1998), Hannafin & Hooper, (1989) and Carroll & Rosson, (1985). The statements combined, is a perfect description of what **design** is all about.



**Table 3.7 Descriptions from three known authors regarding design**

Author	Description
<b>Shneiderman, (1998: 99)</b>	Shneiderman describes design as inherently creative and unpredictable. Therefore it is imperative that designers have to combine a sound knowledge of technical feasibility with a mystical aesthetic sense of what attracts the users.
<b>Carroll and Rosson (1985)</b>	Carroll & Rosson characterise design in the following manner: <ul style="list-style-type: none"> <li>▪ Design is a process, therefore it cannot be statistically represented.</li> <li>▪ The design process is nonhierarchical, which implies freedom of navigation.</li> <li>▪ The process is radically transformational, partial and interim solutions during the development process may not be applicable in the final design.</li> <li>▪ Design involves the discovery of new goals.</li> </ul>
<b>Hannafin &amp; Hooper (1989)</b>	Hannafin & Hooper identify the following functions of screen design: <ul style="list-style-type: none"> <li>▪ Focusing attention.</li> <li>▪ Developing and maintaining interest.</li> <li>▪ Promoting deep processing.</li> <li>▪ Promoting engagement.</li> <li>▪ Facilitating navigation throughout.</li> </ul>

The above information conveys the dynamic nature of the design process. Using this as a guideline, together with the design specifications discussed in the literature review (Chapter2), should provide a solid structure for a well-designed and workable product.

### 3.4.2 Objectives

"Objectives are clear-cut statements of what issues have to be accomplished to reach the goal". (Fardouly, 1998)

The objectives regarding this project and the manner, in which each one will be met, are presented in Table 3.8.

**Table 3.8 Design objectives**

Objective	Manner in which objective will be reached
<ul style="list-style-type: none"> <li>▪ Create a marketing tool for the <b>Program</b></li> </ul>	<ul style="list-style-type: none"> <li>▪ An attractive home page with internal links to attract attention and take the user into the site.</li> <li>▪ External links to professional related sites.</li> <li>▪ A link page with external links to and from design related sites.</li> <li>▪ Create the site in a manner to ensure search engine success.</li> </ul>
<ul style="list-style-type: none"> <li>▪ Create functional communication channels</li> </ul>	<ul style="list-style-type: none"> <li>▪ Active e-mail button on each page in the site.</li> <li>▪ Provide a bulletin board facility.</li> <li>▪ Provide a listserv facility to the different groups.</li> </ul>

### 3.4.3 Considerations taken into account during the design phase

Important information regarding the design and development of the web site was gathered from the literature (Chapter 2), as well as in the analysis phase and was used in the initial decision-making. Following are the issues taken into account:

#### 3.4.3.1 Delivery system

The design environment is a fast moving, process driven, competitive industry. It is of cardinal importance to keep and stay ahead. The **Program** as an educational institution has to keep track of the latest technologies, trends and changes within the design world.

The use of the WWW as a primary delivery system, was chosen for the following reasons:

- The results of the target analysis clearly indicated that the majority of the learners have access to the Web and Internet.
- The learners need the Internet for research purposes.
- Functional communication, which is imperative, can be provided via the Web by means of listservs, bulletin boards and e-mail facilities.
- The most powerful marketing tool to facilitate the needs of the **Program** is the Web.

The client, together with researchers decided to provide the site on CD for the following reasons:

- A CD holds 650 MB and copies can be made for a reasonable price.
- A hand out at seminars, conferences and open days would serve as part of the marketing strategy.



- The general issues regarding the course, for example a summary on the different subjects and choices per year, entry requirements, relation to other professions and numerous job opportunities, would provide the necessary information to potential students and their parents.

### 3.4.3.2 Content and layout

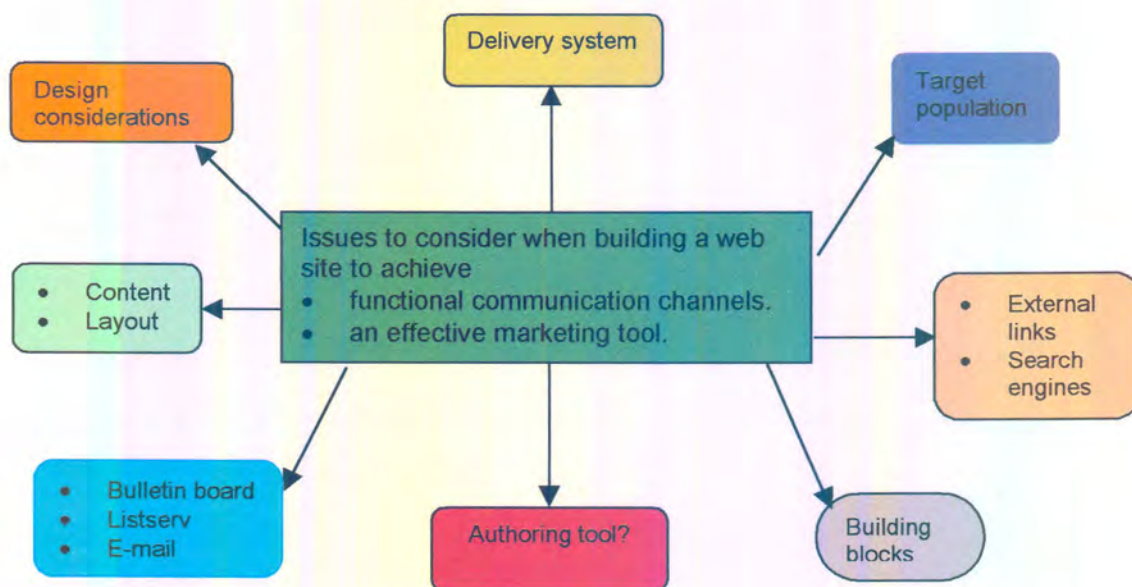
Numerous issues regarding the content should be kept in mind when designing a web site. The nature of the target population determines the layout and presentation of the content to a great extent. Therefore the client supplied the specific content. The logic flow thereof was discussed by the client and the researchers and displayed on paper by means of flowcharting and branching.

A flowchart is a chart or diagram of how the program progresses or flows.

This indicates the structure and sequence of the content and matures and changes constantly as the project progresses. (Allesi&Trollip, 1991:295; Scwier & Misanchuk, 1993:193-200)

Figure 3.5 displays a flowchart of the nature of the potential web site.

**Figure 3.5 Illustration of the potential web site**





".....the more time spent on flowcharting, the less time you will spend later correcting program errors." (Allesi & Trollip, 1991:318)

The information is organised and presented in manageable chunks, ranging from general matters to the more specific, e.g. course contents, descriptions of subjects etc. (Schwier & Misanchuk, 1993:148)

Suitable headings were chosen to assist in the organising of the information. Each issue and therefore each heading was identified by using a specific colour:

Background	Professional Links
Education	Useful Links
Future Trends Laboratory	What's On
Workshops & Projects	Contact Details

A navigation map (site map) assists in organising the content by means of links among the different sections of the content. This provides a logical flow of the interactive interface. (Vaughan 1998:464) Sequencing the content in this manner provides the users with a familiar site to which they can return at any given time. (Vaughan, 1998:468)

A site map with a non-linear approach provides navigation control where the users can brows through the content at will. An option to return to the site map has to be available on each page throughout the site.

#### 3.4.3.3 Text design

Computer screens allow for a very limited workplace when developing a web site. Balance is essential because too little text causes annoying page turns, while too much text causes the screen to appear overcrowded and unpleasant. Therefore the design of the text in total has to be very carefully planned to ensure a pleasing, yet functional site.

For the purpose of this site the following decisions regarding the design of text were taken into consideration during the design phase:

- Typeface letters should be in black, except where links are concerned.
- Sans serif Arial font is legible and should be used as the primary choice.
- The size of the font should vary in proportion to the importance of the message it delivers.
- Justification should be left.
- **Bold** should only be used for emphasis.
- Underlining should indicate links.
- Where possible text lines should not exceed 60 characters.
- Text should appear in the middle of the page.

#### 3.4.3.4 Screen Design

"Design advice abounds, and what makes a layout 'good' often seems to be a matter of opinion. The most universal examples of good layout, though, tend to be simple and maintain a delicate balance between unity and diversity." (West, 1987:53)

The design of the screens should provide a pleasing look and feel. In order to accomplish this, a number of design principles should be adhered to and were taken into consideration during the design phase.

- Screen size should be 650x420 pixels to facilitate printing.
- The interface should be clear and simple.
- Colour should be utilised to assist in creating consistency and implicate a specific subject or section. (e.g. the different headings)
- Enough white space should be applied to enhance harmony.
- The title should appear in the top centre of the screen.
- The logo (metaphor) should appear in the top left corner on each screen.
- The layout on every screen should be consistent and regular.
- A main menu should appear on the left-hand side as well as at the bottom of every screen.
- A horizontal sub-menu should appear in the text area below the heading on every screen.
- Alternative tags (ALT-tags) should accompany all graphics.
- GIF and JPEG images should be used.

### 3.4.3.5 Navigation

Where am I? Where can I go next? These are the kinds of questions that are addressed by navigation information. A user should, at all times, be able to find his/her way on a web site. Therefore navigation has to be well designed to ensure pleasant surfing through the site.

- The **site map** (navigation map) should be the second page, following the home page, with links to all the other sections.
- Navigation should be consistent, easy to use and a navigation bar should appear on each page.
- Links should be in contrasting colour and change colour when visited.
- Arrows and icons should be assisted by alternative text.
- Links to return to the **home page** as well as the **site map** should appear on every screen.

### 3.4.4 **Design Specifications as applied in this project**

In order to decide on the on the specifications for the design of this product, certain matters had to be taken into account. The client proposed specific needs, the target population had to be carefully analysed and characteristics considered and the purpose of the site had to be taken into consideration as well.

Following are two tables, Table 3.9 and Table 3.10, indicating why the designers decided on the specifications and how they derived at the decisions shown in Table 3.11.



Table 3.9 displays the characteristics of the target population in relation to the specifications of the client. The design implications derived from relationship between the above issues.

**Table 3.9 Target group characteristics vs. client specifications**

		Client specifications													Design implications				
Target group characteristics		Exposure	Accessibility	Hypertext / Links	Mod/classic look	Sections	Communication	Mail facility	Movement	Colors	Layout of text	General content	What's on	Graphics		Corporate logo	WWW / internet	Marketable	
		From 17yrs up				✓					✓								Modern, funky colors
		Artistic flair				✓				✓	✓				✓				Eye catching look
		Logical					✓												Consistent layout
		Keen web surfers	✓		✓												✓	✓	Functional links
		Professionals in design field				✓		✓	✓			✓		✓	✓	✓		✓	Professional look, functional info, marketing prospects
		Computer access		✓													✓		Research, communication possibilities
		Need information/feed-back						✓	✓								✓		Functional communication channels
		Seek specific information	✓		✓		✓										✓		Search engines, relevant content
		Need access to field-related info			✓									✓			✓	✓	Active links, e-mail facility, downloads
		Research		✓	✓												✓		Research facility, portals, search engines
		Internet knowledge	✓														✓		Surfing, search engines
		3-Dimensional				✓				✓									Animation, colour coding
		Creative				✓				✓	✓				✓				Eye catching
		Limited amounts of information					✓					✓							Relevant info in Manageable chunks
		Organized information					✓						✓						Sections
		Communication needs						✓	✓										Interaction
		Need to identify														✓			Icons, symbols
		Group participation						✓	✓					✓					Bulletin boards, e-mail, listserv

Table 3.10 displays the design implications in relation to the composition of the site. The design specifications taken from the literature were allocated to each design / site composition relationship.





**Table 3.10 Design implications vs. composition of the site = design specifications**

		Composition of the site															Design specifications			
Design implications		home page	menu bars	page layout	sections	font	Content	E-mail, b/board	symbols	navigation	Link page	Calendar	URL's	Colors	Graphics	Relevant information		Color of font	White space	
	Modern, funky colors	✓	✓								✓				✓					Web safe colors taken from corporate logo
	Eye catching	✓				✓					✓				✓		✓		Color combination and line structure	
	Consistent layout		✓	✓	✓	✓	✓		✓	✓				✓				✓	Structural ,white space, logo at top of each page	
	Functional links	✓	✓								✓	✓		✓					Active hypertext	
	Marketing	✓									✓		✓	✓					Counters, banners, links to and from other sites	
	Functional communication							✓			✓	✓	✓						E-mail facility, bulletin board, listserv	
	Manageable portions content				✓		✓		✓							✓		✓	Chunking	
	WWW / links							✓			✓		✓						Marketing tool	
	Content				✓	✓			✓			✓	✓			✓	✓		Relevant, in chunks, printable.	
	Visual impact	✓		✓		✓					✓		✓	✓				✓	sections distinguished with colors, ample white space	
	understandable/ clear		✓	✓	✓	✓	✓			✓								✓	font Arial and large enough for everyone to read .Short sentences	
	Research facility							✓			✓		✓			✓			Research toolkit, links to portals and search engines	
	symmetric/ asymmetric		✓	✓							✓		✓						use of color ,lines and logo	
	Animation	✓									✓				✓				Animation, banner	
Corporate logo, icons and symbols	✓		✓					✓										Program identification from home page throughout		
Interaction		✓					✓		✓			✓						Active navigation buttons in site, links to other sites and communication facilities		

The design implications and issues regarding the composition of the site were compared to the literature and the design specifications for the purpose of the prototype web site were chosen accordingly.

Table 3.11 displays the design specifications applied in creating the prototype web site.





Table 3.11 Design specifications



Building blocks	Implementation in this prototype
<b>Text attributes</b>	
<b>Type face</b>	<ul style="list-style-type: none"> <li>▪ Headings - <b>Comic Sans</b>.</li> <li>▪ Content - <b>Arial</b>.</li> <li>▪ Navigation - <b>Arial</b>.</li> </ul> <p>The above typefaces are <b>sans serif</b> and easy to read.</p>
<b>Print size</b>	<ul style="list-style-type: none"> <li>▪ Headings - large (26) to attract the attention.</li> <li>▪ Sub- headings - medium size. (14)</li> <li>▪ Content text - normal. (12)</li> <li>▪ Content in tables - small (8) to prevent using too much space.</li> <li>▪ Navigation bar - small (8) to cope with the limited space.</li> </ul>
<b>Colour</b>	<ul style="list-style-type: none"> <li>▪ Black text.</li> <li>▪ Links automatically change to blue and maroon when visited.</li> </ul>
<b>Type faces</b>	<ul style="list-style-type: none"> <li>▪ <b>Bold - Main headings and important words.</b></li> <li>▪ <u>Underline</u> - to indicate <u>active links</u> only.</li> </ul>
<b>Justification</b>	<ul style="list-style-type: none"> <li>▪ Headings - centred.</li> <li>▪ Body text - left justified as indicated in the literature.</li> </ul>
<b>Case</b>	<ul style="list-style-type: none"> <li>▪ Combination of upper and lower case for easy reading. (Sentence case)</li> </ul>
<b>Buttons</b>	<ul style="list-style-type: none"> <li>▪ Text buttons used on navigation bar.</li> <li>▪ Hypertext buttons used for sub-menus below the headings on each screen.</li> <li>▪ Default Internet buttons may also be used.</li> </ul>
<b>Symbols and icons</b>	<ul style="list-style-type: none"> <li>▪ The home button  is assisted by alternative text and appears on the top right hand side on each screen.</li> <li>▪ The red arrow , assisted by alternative text, appears on the right at the bottom of the pages leading to a next page of the same section. (e.g. Education, page 2.)</li> <li>▪ Unique logos of related design companies appear on the <b>Useful Links</b> page.</li> </ul>
<b>Animation</b>	<ul style="list-style-type: none"> <li>▪ Animated text as well as animated images do not currently feature on the site, but will be incorporated in future.</li> </ul>
<b>Layout of text</b>	<ul style="list-style-type: none"> <li>▪ Text in the centre of the screen covering not more than 14 centimetres,</li> <li>▪ Enough white space to ensure clear display of text.</li> <li>▪ Blank lines to indicate new paragraphs.</li> <li>▪ Leaf image appears at the bottom of each screen to indicate the end and to create space between chunks of information.</li> <li>▪ Downscrolling limited to an average of 2 screens.</li> <li>▪ Horizontal scrolling not used.</li> <li>▪ Information provided in manageable chunks to prevent information overload.</li> </ul>



Table 3.11 (continued)

Design Specifications	Implementation in this prototype
<b>Screen design attributes</b>	
<b>Simplicity</b>	<ul style="list-style-type: none"> <li>▪ The design is straight forward and was created by using a grid</li> <li>▪ Basic structure on each page is identical</li> <li>▪ Single column format is used.</li> <li>▪ Arial and Comic Sans are the only typefaces used</li> </ul>
<b>Consistency</b>	<ul style="list-style-type: none"> <li>▪ Screen layout throughout the site is consistent. and is repeated on every screen.</li> <li>▪ Allotted colours to specific subjects, which serve as identification throughout the site.</li> <li>▪ Navigation bar and <b>Program</b> logo on the left hand side on every screen.</li> </ul> <p>Major headings centred at the top of each screen.</p>
<b>Clarity</b>	<ul style="list-style-type: none"> <li>▪ Design terminology familiar to the target group and related to the industry.</li> <li>▪ Bulleted lists where applicable.</li> </ul>
<b>Aesthetic consideration:</b> -Balance -Harmony -Unity -Rhythm	<ul style="list-style-type: none"> <li>▪ Using different shapes and sizes creates informal balance.</li> <li>▪ The asymmetrical balance provides stability.</li> <li>▪ The consistent use of colour, graphics, fonts and general page layout ensure unity, rhythm and harmony throughout the site.</li> </ul>
<b>White space</b>	<ul style="list-style-type: none"> <li>▪ Well-planned white space enhances balance and creates lightness to the screen display.</li> <li>▪ Assists in the chunking of information and separation of different ideas and subjects.</li> </ul>
<b>Colour combinations</b>	<ul style="list-style-type: none"> <li>▪ The client supplied a colour palette with the desired colours, which the designers tried to match up against the nearest web safe colours. The designers used the colours from the <b>Program</b> logo (appearing in the top left corner) as a guideline.</li> <li>▪ Earthy colours were used for the framework. Each subject is identified by a specific colour and consistently used throughout the site.</li> <li>▪ The background is a sand colour and compliments the black text.</li> <li>▪ Each screen employs only two main colours; the sandy background and one earthy colour used for the framework.</li> <li>▪ The colour combinations are pleasing and attractive.</li> <li>▪ The use of a hue per subject is functional and enhances identification.</li> </ul>
<b>Graphics and images</b>	<ul style="list-style-type: none"> <li>▪ GIF AND JPEG are the best-suited images to utilise.</li> <li>▪ The images used should not exceed 50K, to ensure fair download time.</li> <li>▪ To accommodate text-only browsers, alternative text was provided for every image.</li> <li>▪ All the images were supplied by the client and are either student work or work from design related companies, individuals or institutions.</li> <li>▪ The development team took the original logo of the Program, changed it into a faded image against the sandy background and ensured consistency of the background colour from the first page onwards..</li> </ul>

### 3.5 Stage 3: Development (†)

#### 3.5.1 Introduction

The outcome of the development phase is a computer delivery of the product. Therefore it does not only include designing of the product on paper, but also implementing it on the computer and finally evaluating the product.

The development model used during this study was empirically based; on a cycle of drafting, evaluating and revision until the product met with all the objectives and performed the way it was intended to.

(Alessi & Trollip; 1991:244-245)

At that stage the expectations had been clarified, resources and constraints had been identified and the sequence of contents had been determined. A fair amount of flowcharting (diagram of possible paths through the 'site') had been done and the developers were ready to start with the storyboarding. (Alessi & Trollip, 1991:244-245; Phillips, 1997:63)

#### 3.5.2 Storyboarding

"While the flowcharts depict the sequence and decisions of a 'program', the storyboards depict its content and presentations." (Alessi & Trollip, 1991:247)

Storyboards differ from the flowcharts in that they are detailed illustrations showing each change to the computer screen. Storyboards convey other important information to the reviewers and the programmers. The actual information presentation, prompts, pictures, images and animations are displayed on paper and the draft on paper should be evaluated and revised until everybody is satisfied. (Alessi & Trollip, 1991:247)

Since the researchers were responsible for the design as well as the development of this project, they used the model of Phillips as a guideline.

At the top of the storyboard the designer indicates the number of the objective that the screen supports, the screen number and the number of screens that relates to the objective. (Phillips, 1997:63)

The designers/developers drafted various storyboards and in collaboration with the clients, a number of evaluations were done. These formative evaluation sessions resulted in revision of the product.

### 3.5.3 Authoring tool

Initially *Microsoft FrontPage 98* was chosen as the authoring tool for this product, because it is a member of the Microsoft Office family of products and it shares many of the features of the Office package, which was known to the developers. *FrontPage 98* also creates the HTML code; thus no knowledge of programming or HTML was necessary. This seemed the likely choice to make and the developers built the first few pages as examples of the potential web site.

More and more colleagues and classmates started using *Macromedia Dreamweaver2* and the attributes of the software became more apparent.

Following are different attributes of *Dreamweaver*:

- *Dreamweaver* allows efficient design and production of screens, as well as comprehensive site management.
- It is a professional visual editor for the creation and maintenance of web screens.
- *Dreamweaver* allows the checking of a web site on all the popular browsers and platforms.
- The use of layers and the user-friendly interface makes working in *Dreamweaver*, easy and enjoyable.
- By converting layers into tables, *Dreamweaver* allows precise positioning of elements on a HTML screen, especially to accommodate 3.0 browsers and lower.
- *Dreamweaver* has an automated link and file management, which simplifies the creation and maintenance of a web site.

(*Dreamweaver* information, 1999:1)

With everybody using *Dreamweaver*, courses being presented in the operation of the software and available assistance from people working in *Dreamweaver*, as well as positive write-ups in computer magazines, the developers decided to change to *Dreamweaver*. The developers found the software an excellent authoring tool, which complied with all their needs in the building of the site.



Comparison between different authoring tools taken into consideration is displayed in Table 3.12.

**Table 3.12 Comparison between different authoring tools**

Authorware	Dreamweaver	Front Page
Macromedia product	Macromedia product	Microsoft product
Useful for storyboarding. Can change sequences, add options and restructure interactions by means of dragging and dropping icons.	Serves as an interface between the developer and the computer.	Serves as an interface between the developer and the computer.
Macintosh and Windows compatible.	Easy to create cross-platform, cross-browser platforms.	Powerful WYSIWYG HTML editor.
Able to incorporate and edit multimedia elements.	Allows efficient design and production of screens	Allows building of structure without creating pages.
Able to import a variety of different files.	Provides more control and formatting options than any other authoring tool.	Allows direct access to HTML to edit.
Provides its own sound editor and supports other sound formats.	Able to import HTML documents without reformatting the code.	Help files are simple and easy to understand with step-by-step walk throughs.
Video can be displayed in motion or still.	Easy to use for non-professional designers	Can be integrated with all Microsoft Office applications.
Permits storage of information in memory variables.	Supplies comprehensive site management.	Supplies extensive web site management support.
	New Dreamweaver has been redesigned so that every part can be customized to own preference	Support frames and can create multiframe web pages. Not all web browsers support frames.

(Alessi & Trollip, 2001:392; Bennet, Watson & Smuts, 2000; Coetzee, 2000:92; Dreamweaver information, 1999:1 Vaughan, 1998:147,401; Hodge, 2000; Microsoft FrontPage Editor, 2001)

### 3.5.4 Formative evaluation

Formative evaluation takes place while the program is being developed. The evaluator watches closely while some of the of the actual target population use the product and suggests changes where necessary. It is imperative to use evaluation, as a means of obtaining information on what improvements should be made to the product as well as the process. (Phillips, 1997:136)



Informal formative evaluation took place continuously and changes were made as soon as they became apparent after the evaluation sessions. In this manner the continuous changes assisted in presenting a successful product.

### 3.5.5 Development of the prototype (+)

The development of the prototype took place in different phases as a result of different circumstances such as the restructuring of the departments. Some of the changes were purely experimental while the client requested the others adaptations.

#### 3.5.5.1 Phase 1

During the development of the initial home page, the developers were still in an experimental mode and used the logo of the **Department of Interior and Product Design** as a starting point.

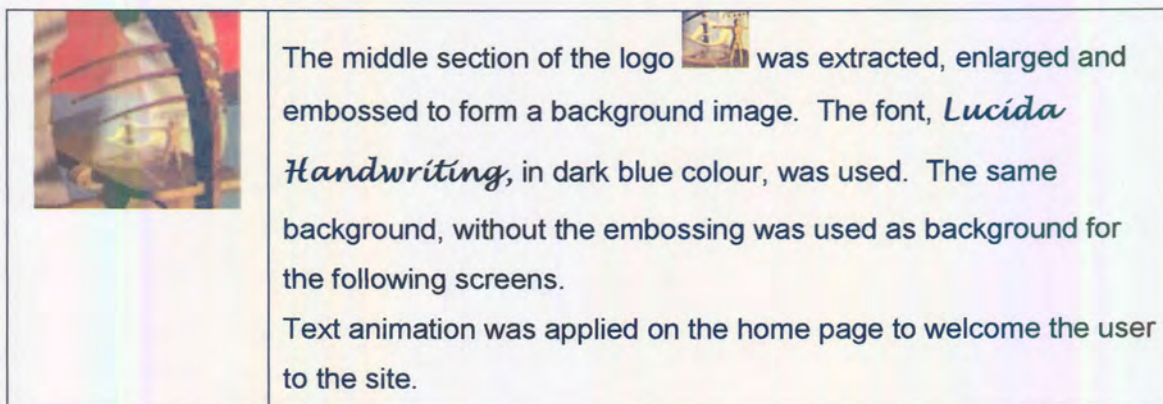


Figure 3.6 displays an example of the first home page.



Figure 3.6 Example of the home page - Phase 1 (†)



#### 3.5.5.2 Evaluation of phase 1

Classmates and the client evaluated the first prototype and different comments were made.

- The enlarging of the image caused a tiling effect, which was not acceptable.
- The difference in the following background textures disturbed the consistency.
- The layout of the pages was not the same, thus affecting the consistency once more.
- At this stage the client was still open for suggestions and was also willing to supply examples for a potential home page.

#### 3.5.5.3 Phase 2

As a result of restructuring of the departments at the University, the department now resorted under the School of the Built Environment, Department of Engineering and the name changed to **Program in Interior Design**. This meant a fresh start, a bigger client group and new perspectives.

All parties involved agreed on a 'funky', but timeless look. The developers took initiative and created a skeleton prototype with fresh, trendy colours. An abstract image, in bright lime, orange and purple colours, was placed in the middle of the screen. This resulted in



a structured layout, as the main heading and the navigation were arranged around the image in a rectangular manner.

The font used was **Comic Sans** and suited the fun look. The only definite specifications were the University logo that had to be displayed on the home page and the ID logo representing the **Program**.

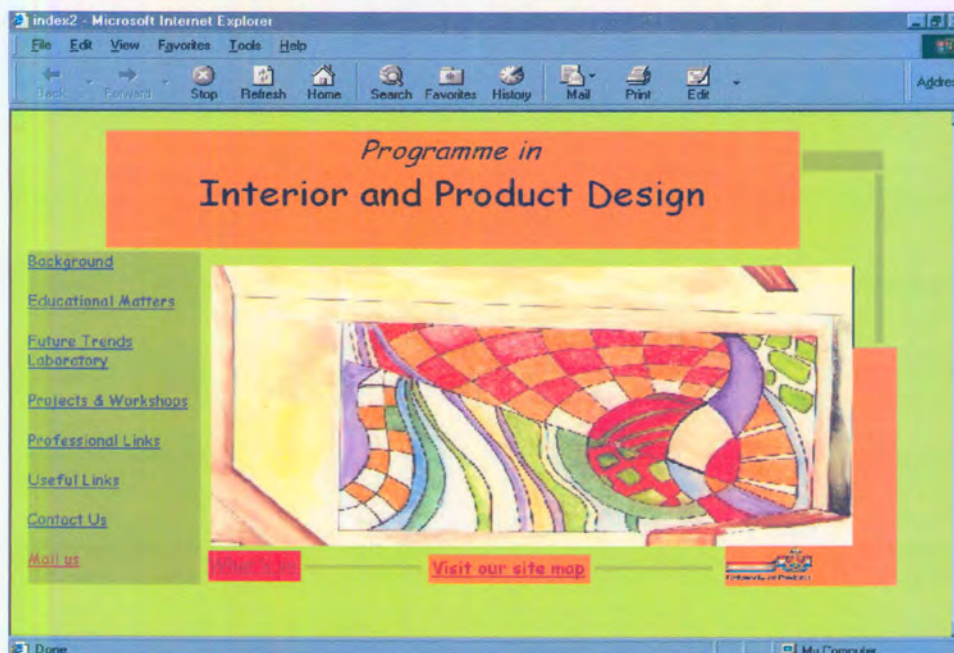
The client had already supplied the content and images (student work and design related slides), which could be incorporated in the site.

The developers created the rest of the pages in a structured manner to comply with the look of the home page. All the pages had a similar layout to adhere to the consistency rule. The main heading bar at the top, the navigation bar on the left-hand side and a short vertical bar at the top on the right, supplied a frame to each page.

Each section was identified by a specific colour obtained from the design on the home page.

Figure 3.7 displays an example of the home page during the second phase

**Figure 3.7** Example of the home page - Phase 2 (†)



#### 3.5.5.4 Evaluation of phase 2

Informal formative evaluations took place. A number of people looked at the site and gave their inputs. Then the developers and the client looked at the site critically and discussed all the possibilities.

Even though the majority of the people really liked the funky, fresh look of the site, the client did not like the colours at all and suggested earthier, subdued colours. He supplied a brochure with the desired colours.

The client also agreed to design a home page, which would suit the **Program** as well as the people involved, but accepted the structured layout of the rest of the web site.

#### 3.5.5.5 Phase 3

The client provided a design, which was totally different. The theme was ethnic and depicted African influences. Strong, contrasting colours, such as red, blue, black and white were used.

The developers and the client decided on some kind of animation to highlight the important events in the design world.

Figure 3.8 displays an example of the home page during the third phase.



Figure 3.8 Example of the home page - Phase 3 (†)



#### 3.5.5.6 Evaluation of phase 3

As the client supplied the design in a Microsoft Presentations format, the developers had to change it into a web format. Unfortunately the image was nearly a megabyte in size, which implicated a download time of nearly 15 minutes. Needless to say changes had to be made to the image.

Representatives of the different departments in the School of the Built Environment, together with the client, attended a focus group evaluation session. They discarded this prototype completely as they agreed that they should be looking for a uniform idea to suit all the Schools resorting under the School for the Built Environment.

The representatives of the different schools (Architecture, Landscape Architecture and Program in Interior Design) agreed to design a home page that would work for all the parties involved.

#### 3.5.5.7 Phase 4

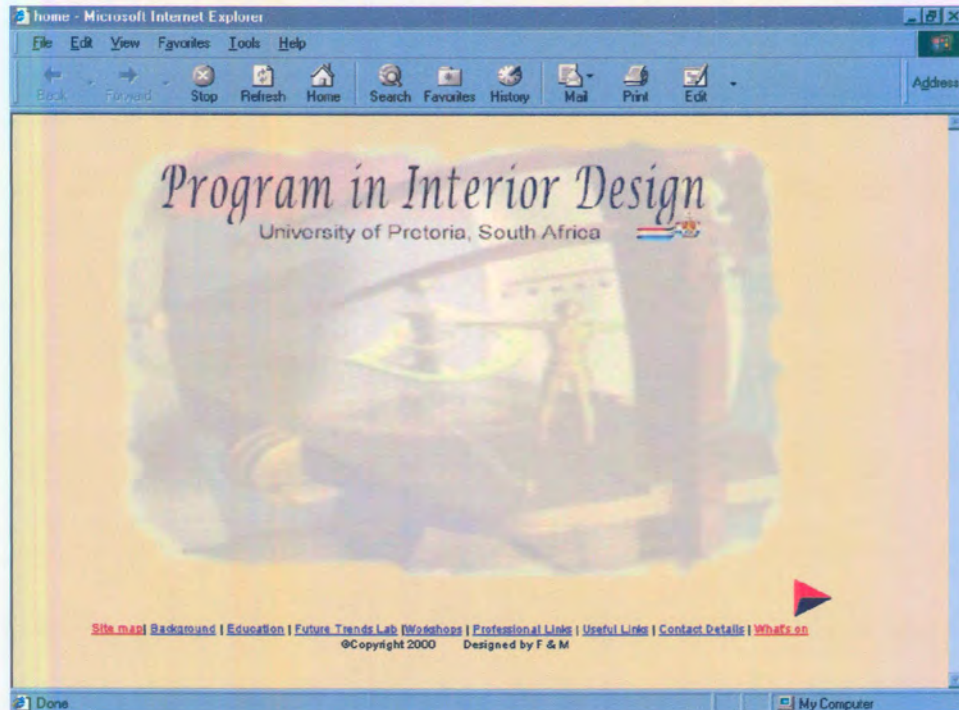
The client was abroad for a long period of time, the proposed design of a home page from the representatives from the School of the Built Environment did not materialise and time was running out. The developers were forced to resort to a neutral home page.



They used the logo of the Program, edited the image to blend in with a sandy background and used the sandy background for all the other screens in the web site.

Figure 3.9 displays an example of the home page during the fourth phase.

**Figure 3.9 Example of the home page - Phase 4 (†)**



The structure of the rest of the web site remained the way the client agreed upon. The colours were changed to match the colours of the brochure supplied by the client. The web site, with the exception of the home page, was completed according to the overall satisfaction of the client.

Figure 3.10 and Figure 3.11 display examples of two web pages of the prototype web site.

Figure 3.10 displays the site map with active links to all the pages of the site.



Figure 3.11 Example of the site map - Phase 4 (†)

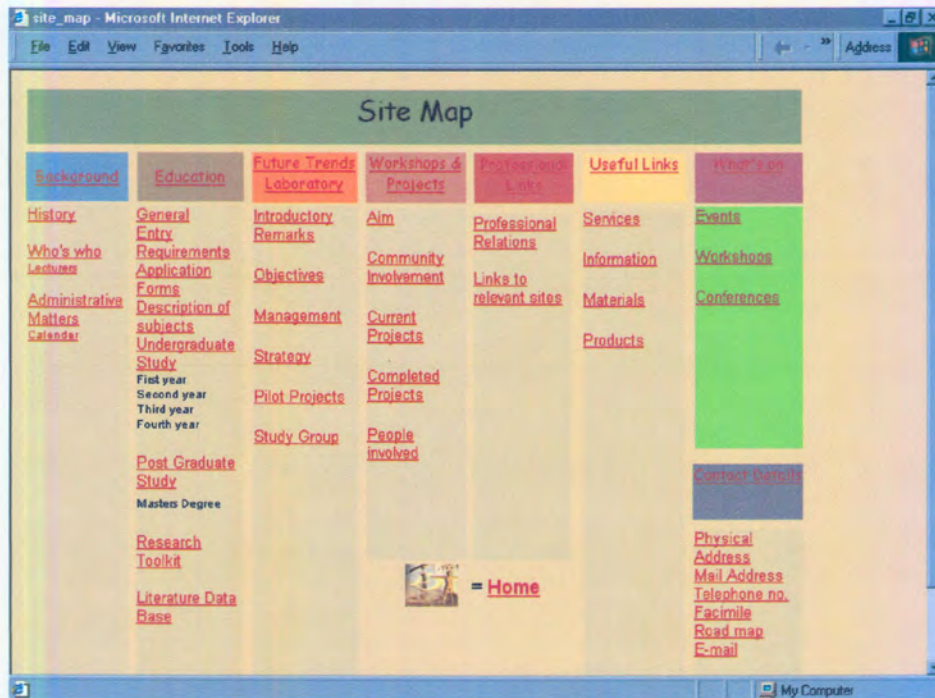
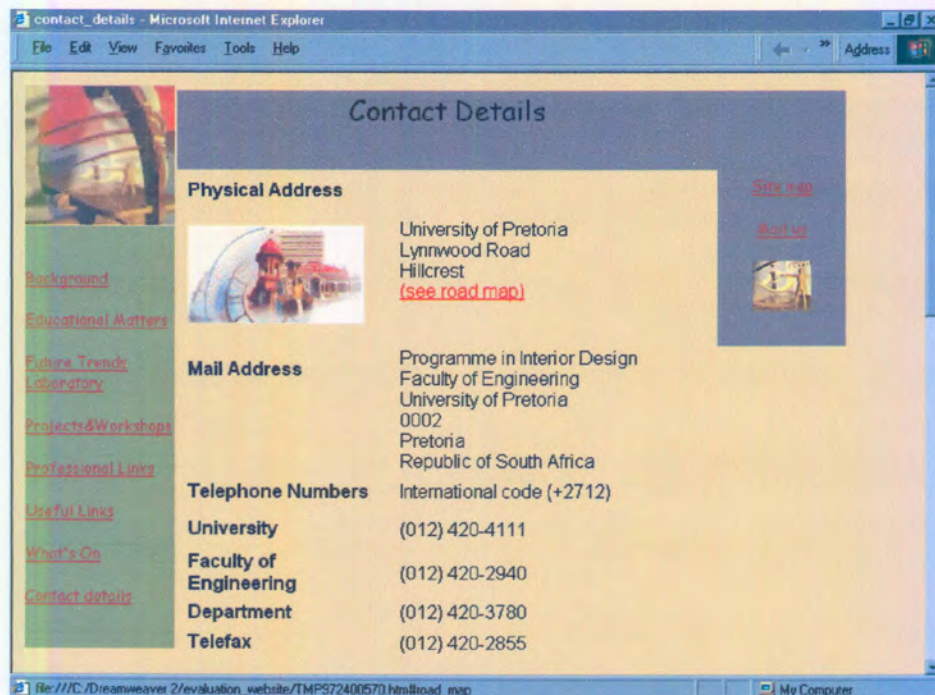


Figure 3.11 displays an example of a structured page included in the prototype web site.

Figure 3.11 Example of a structured page - Phase 4 (†)



### 3.6 Production

Production is the stage when the product has successfully passed through all the design and development stages and all the adjustments and refinements have been adhered to.

The scene is set for creating the web site, which will be followed by the evaluation of the prototype.

In creating the web site a number of factors have to be taken into consideration:

- The working space on a 640 x 480 pixels VGA monitor is more or less 600 pixels wide and 300 pixels tall. (Vaughan, 1998:497)
- The benchmark browsers are *Microsoft Internet Explorer* and *Netscape Navigator* and the product has to be produced to view on either of the browsers, without great discrepancies.
- Because interior design is a fast moving and competitive field, the researchers in conjunction with the client agreed that serious users should have access to 3 browsers and up, thus more intricate 3-D architectural model images as well as video and animation may be incorporated in future.
- Suggested print safe areas should not be more than 535 pixels wide and 295 pixels high.
- The use of CD-ROM is practical and affordable and supplies space for 660 megabytes of data.
- During production the design specifications, as discussed earlier in this chapter, should be adhered to.

After production the prototype undergo **alpha** as well as **beta** testing. Where alpha testing is done in house, more or less within the project team and selected people that aggressively look at all aspects of the work, beta testing is done with a selected real user audience and should not include anyone who has been involved in the production process.

"Test it, then test is again: that's the unavoidable rule. "(Vaughan, 1998: 542)





## CHAPTER 4

### EVALUATION

	<b>Page</b>
<b>4.1</b>	<b>Executive overview</b> 110
<b>4.2</b>	<b>Introduction</b> 112
<b>4.3</b>	<b>Target population and sample</b> 113
<b>4.4</b>	<b>Data collection process</b> 114
4.4.1	Instruments used 114
4.4.1.1	<u>Questionnaire for target analysis - Open Day</u> 114
4.4.1.2	<u>Questionnaire for target analysis - Enrolled students</u> 115
4.4.1.3	<u>Evaluation questionnaire for students and CBT students</u> 116
4.4.1.4	<u>Evaluation questionnaire for experts</u> 116
4.4.2	Collecting data 117

## CHAPTER 4

### **EVALUATION**

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#### **4.1 Executive overview**

This chapter primarily describes the summative evaluation procedure that was used to evaluate the product, but mention of the formative evaluation procedure will also be made.

Evaluation can be described as a methodology where information is acquired and assessed to provide useful feedback regarding an object or a product. (Trochim, 1999) Formative and summative evaluations are applicable.

A **summative** evaluation implies that all the development and major changes have been done. It is a final evaluation to determine whether the product is ready for implementation. During this evaluation the focus is on the achievement of the goals, outcomes, results or outputs of the project. Therefore it does not implicate changes of consequence to the product as an entity. (Allesi & Trollip, 1991:382; Cilliers, 1999:26; Hannafin & Peck, 1988:301)

In order to come to a clear understanding of the objective of a summative evaluation, the formative evaluation that precedes the above evaluation will be summarised briefly.

**Formative evaluation** is a continuous process of evaluation, revision and change. The aim of this type of evaluation is to improve and assist in the forming of the object being evaluated, determining whether the clients needs are being met and what changes should be made. (Allesi & Trollip, 1991:447; Trochim, 1999)

Table 4.1 displays the different stages in the evaluation process.



**Table 4.1. Stages in the evaluation process**

Stages	Activities	Output
<b>Evaluation</b>	<ul style="list-style-type: none"><li>▪ Summative evaluation</li><li>▪ Revise product</li></ul>	<ul style="list-style-type: none"><li>▪ Process and report results</li><li>▪ Evaluation reports - users, experts and lecturers.</li><li>▪ Refinement of program</li></ul>
<b>Report</b>	<ul style="list-style-type: none"><li>▪ Report findings and compile recommendations</li></ul>	<ul style="list-style-type: none"><li>▪ Research report</li></ul>
<b>Conclusion</b>	<ul style="list-style-type: none"><li>▪ Report concluding statements</li></ul>	<ul style="list-style-type: none"><li>▪ Deliver product</li></ul>

The summative evaluation of this web site was conducted to determine:

- the workability of the product,
- to what extent the main research question had been answered; and
- to what extent the sub questions had been answered.

The main research question that had to be answered, was:

What are the issues to consider when building a web site to serve as a functional marketing tool and to provide effective communication?

Table 4.2 displays a layout of the sub questions and an indication of where in the research they have been answered



**Table 4.2 Research sub questions**

Issues	Questions to be answered	Where answered
<b>Information needs</b>	<ul style="list-style-type: none"> <li>▪ What are the characteristics of the target population?</li> <li>▪ Computer literacy?</li> <li>▪ Ability/aptitude?</li> <li>▪ Different target groups</li> <li>▪ What are the needs?</li> </ul>	<ul style="list-style-type: none"> <li>▪ Chapter 3</li> </ul>
<b>Design issues</b>	<ul style="list-style-type: none"> <li>▪ What methods should be applied to ensure the effectiveness of the site?</li> <li>▪ What are the design considerations?</li> <li>▪ What are the practical considerations?</li> </ul>	<ul style="list-style-type: none"> <li>▪ Chapter 2 &amp; 3</li> </ul>
<b>Marketing</b>	<ul style="list-style-type: none"> <li>▪ What methods should be applied for optimal exposure to web-based marketing?</li> </ul>	<ul style="list-style-type: none"> <li>▪ Chapter 2</li> <li>▪ (Literature &amp; evaluation phases))</li> </ul>
<b>Communication</b>	<ul style="list-style-type: none"> <li>▪ How can efficient and effective communication be obtained?</li> </ul>	<ul style="list-style-type: none"> <li>▪ Chapter 2 &amp; 3</li> <li>▪ (Literature &amp; evaluation phases)</li> </ul>
<b>Evaluation/Findings</b>	<ul style="list-style-type: none"> <li>▪ How is functionality and sustainability ensured?</li> <li>▪ Does the site prove to be functional?</li> <li>▪ What are the prerequisites for sustainability?</li> </ul>	<ul style="list-style-type: none"> <li>▪ Chapter 4</li> <li>▪ (Evaluation phase)</li> <li>▪ Chapter 5</li> <li>▪ Chapter 2</li> </ul>

## 4.2 Introduction

For the purpose of this research, formative evaluation was done in an informal manner by means of discussions and interviews, which were recorded in the research diary, throughout the design and development stages of this product. This method provided a well-revised and workable product to be finally evaluated during the summative evaluation.

The evaluation strategies used during the course of this research are a combination of qualitative and the participant-oriented models, where the human factor is recognised and of fundamental importance during evaluation.

" Evaluation means a judgement of merit or worth against a predefined set of standards or expectations. The evaluation process is used to assign a value to the object being evaluated so that its worth or intrinsic value can be conveyed to others"  
(Phillips, 1997:127)

### 4.3 Target population and sample

The target population for the development of this web site was:

- Potential learners (students) considering to enrol for the degree in Interior Design.
- Enrolled students of different years (first, second third and fourth) within the **Program**.
- Lecturers involved in the **Program**
- Professionals in design.
- Interested web surfers.

During the course of this research project, the researcher realised that even though the primary target group lies within the University of Pretoria, the relations and interaction of the **Program** are without definite boundaries, because the active interaction between Universities and institutions locally and abroad is growing rapidly.

Therefore the decision was made to incorporate a group of people with a keen interest in, and know how about Web and Internet issues. (Experts) They were also used as substitutes for the professionals related to the design industry as well as the web surfers.

The respondents in all the groups were volunteers.

The samples used were the following:

- Potential (students) considering to enrol for the degree in Interior Design as purposive sampling.
- Enrolled students of different years (first, second third and fourth) within the Program in Interior Design as purposive sampling.
- Lecturers involved in the School for the Built Environment as purposive sampling.
- Experts from the Information Technology environment.
- Computer based training (CBT) students in their final diploma year at the University of Pretoria as convenience sampling.
- Classmates, colleagues and friends as an informal convenience sampling which were recorded in the research diary.



## 4.4 Data collection process

The researcher used ideas from Lynch & Horton (1997) and Reeves (1994) as a guideline in the development of the questionnaires. One questionnaire was reviewed and statistically prepared by personnel from the Department of Statistics, University of Pretoria.

### 4.4.1 Instruments used

For the purpose of the target analysis two questionnaires were developed and distributed to two different groups:

- Potential students at an **Open day**. (**Appendix A**)
- Enrolled students in the **Program**. (**Appendix B**)

The results from both the above questionnaires provided useful information regarding the research questions. Therefore they were both analysed and incorporated in the summative evaluation.

#### 4.4.1.1 Questionnaire for target analysis. (Open day)

This questionnaire was developed with the main aim of establishing the target population characteristics as well as their possible needs. The following categories were addressed:

- Personal information. (7 questions)
- Educational background. (1 question)
- Geographical and cultural information. (4 questions)
- Computer literacy. (11 questions)
- Marketing. (6 questions)

The questions consisted of Yes/No answers as well as specific one or two word answers. Valuable inputs were received. (**Appendix A**)

#### 4.4.1.2 Questionnaire for target analysis. (Enrolled students)

This questionnaire consisted of the following sections:

- General information.
- Personal information.
- Computer literacy & Internet skills.

The "General information" section consisted of two questions regarding occupation and involvement in the **Program**.

The "Personal information" section consisted of questions regarding the following issues:

- Age.
- Hometown.
- Gender.
- Language.
- Accommodation while at university.
- Communication matters.

The "Computer literacy and Internet skills" section attended to ten questions regarding the respondents:

- Computer literacy.
- Frequency of computer use.
- Purpose of the use of the computer.
- Involvement and use of the Internet.
- Attitude towards the use of search engines.
- Attitude to marketing issues.
- Communication issues.

A final open-ended question was asked to determine what the students would like to find on a web site for the **Program** to ensure functionality and usability to everybody involved in the **Program**. (**Appendix B**)

A basic questionnaire regarding the "Evaluation of the web site" was initially developed and minor changes were made for the three different sample groups. (**Appendix C**)



A number of the questions had to be answered by using a scale from 1 to 5 (prioritising) or marking only the applicable answer. On some of the questions a space for comments were provided.

#### 4.4.1.3 Evaluation questionnaire for student users and CBT students

A group of 25 potential users, the students of the Program as well as 14 from the CBT student group were asked to complete the same questionnaire regarding the evaluation of the web site.

This questionnaire contained 20 questions in total and was divided into the following categories:

- Layout.
- Navigation.
- Content.
- Communication, support & ease of use.

A space for "general recommendations" about the web site as a whole was provided. **(Appendix C)**

#### 4.4.1.4 Evaluation questionnaire for experts

Experts in the field on Information Technology and Multimedia were asked to complete a questionnaire that was very similar to questionnaire 3. **(Appendix D)**

The questionnaire was divided into the following categories:

- Layout.
- Navigation.
- Content.
- Communication, support & ease of use.

The experts were asked to supply comments and/or recommendations in the spaces provided, after each category regarding the impression of the specific category.

The table below indicates which questions in the questionnaires attempted to answer to the research questions.

**Table 4.3 Relationship between the research questions and instruments used**

Research questions	Questionnaire 1 (Open day)	Questionnaire 2 (Target analysis)	Questionnaire 3 Questionnaire 4 (Evaluation questionnaire)	Literature
What are the characteristics of the target population? Computer literacy? Ability/aptitude? What are the needs?	Category 1,2,3.  Category 4 Category 4 Category 4,5	Section A, B  Section C Section C Section C		
What methods should be applied to ensure the effectiveness of the site?  What are the design considerations? What are the practical considerations?		Questions 12, 13, 16	Results from total evaluation questionnaires (3 & 4)	Chapter 2  Chapter 2 Research diary
What methods should be applied for optimal exposure to web-based marketing?	Category 5	Questions 18, 19, 20, 21		Chapter 2
How can efficient and effective communication be obtained?		Question 9, 10,18,19	Sections: Navigation & Communication, support, ease of use	Chapter 2
How is functionality and sustainability ensured? Does the site prove to be functional? What are the prerequisites for sustainability?	Category 4,5		Results from total evaluation questionnaires (3 & 4)	Chapter 2  Chapter 2

#### 4.4.2 Collecting data

The first convenience-sampling questionnaire that was handed out and completed during the open day of the University of Pretoria, were used to assist in determining the target group. A number of questions answered to issues regarding the research questions and will be discussed in Chapter 5.



The researchers initially loaded the web site onto 50 Megs.com, but experienced an exceptionally long download time from the server as this specific American server is a host to millions of web sites. They decided to load it onto a server at the University of Pretoria. The download time proved to be satisfactory as well as familiar to the potential users.

The web site was also loaded onto two computers at the computer centre of the School for the Built Environment, as an Internet connection was not available in the centre.

The researchers arranged with the client and some of the lecturers involved in the **Program** to motivate and assign the students to the task of evaluating the web site.

Various difficulties arose during the evaluation period, such as the problem that the students did not comply with the request. During that period the client was abroad and the students went to a conference in Cape Town. This caused a tremendous delay in the research process. Three weeks elapsed without any progress.

Eventually the researchers as well as the lecturers individually assisted most of the students during class periods in completing the evaluation properly.

The CBT students completed the evaluation during a class session, using the web site on the WWW. This exercise was concluded without any problem at all and within a reasonable time period.

The evaluation questionnaires with clear instructions were e-mailed to the experts and returned in the same manner within one week.

Although the Department of Statistics assisted in the formatting of the questionnaires, the results were compiled, interpreted and analysed by the researchers and the findings are discussed in Chapter 5.