

An Internet based information resource for marketing purposes with specific reference to Interior Design

A thesis

by

Maryke Meter

submitted in partial fulfilment of the requirements for the degree

Magister Artium (Multimedia)

in the

Department of Information Science

University of Pretoria

Supervisor: Prof Dr J.C. Cronjé

October 2001



Abstract

Candidate:

Maryke Meter

Supervisor:

Prof. Dr. J.C. Cronjé

Department:

Information Science

Degree:

Magister Atrium (Multimedia)

Title:

An Internet based information resource for marketing purposes

with specific reference to Interior Design.

This thesis reports on issues to consider when building a web site to serve as a marketing tool and as a channel for communication. Background regarding the Program in Interior Design is provided. The needs and characteristics of the target group are provided to substantiate the need for such a product. In order to build a web site of this nature, knowledge of the principles for design, development and production is imperative as well as a clear understanding of marketing and communication on the WWW. The different phases of the development process, these being analysis, design and development, are discussed.

The evaluation process, where formative- and summative evaluation was applicable, is described. A single questionnaire completed by four sample groups was used to obtain relevant information regarding the prototype web site. The questionnaire was divided into four different sections being layout, navigation, content, and communication. The findings are presented and described in detail. Conclusions in terms of the findings are discussed.

It was found that a web site of this nature can serve as an effective marketing tool and that it can provide functional communication facilities. Recommendations for the improvement of the product as well as general recommendations for similar development are made.

Key words: Future Trends Research Laboratory, Virtual workshop, Program in Interior Design, marketing tool, communication facility, web site, multimedia, information needs.



Samevatting

Kandidaat:

Maryke Meter

Promotor:

Prof. Dr. J.C. Cronié

Departement:

Inligtingkunde

Graad:

Magister Atrium (Multimedia)

Titel

'n Internet gebaseerde inligtingshulpmiddel vir

bemarkingsdoeleindes met spesifieke verwysing na

Interieurontwerp.

In hierdie verhandeling word verslag gedoen oor vraagstukke wat na vore kom tydens die ontwerp van 'n webwerf om te dien as 'n bemarkingsmeganisme asook 'n kanaal vir kommunikasie. Agtergrond met betrekking tot die Program in Interieurontwerp word verskaf. Die behoeftes en eienskappe van die teikengroep word verskaf om sodoende die behoefte aan sodanige produk te bevestig. Kennis van die beginsels vir die ontwerp, ontwikkeling en produksie van die produk is noodsaaklik, asook 'n duidelike begrip van bemarking en kommunikasie op die Wêreldwye Web. Die verskillende fases in die ontwikkelingsproses, naamlik analise, ontwerp en ontwikkeling, word beskryf.

Die evalueringsproses waar formatiewe en summatiewe evaluering van toepassing is, word beskryf. 'n Enkele vraelys wat deur vier monster groepe voltooi is, is gebruik om relevante inligting aangaande die prototipe webwerf in te win. Die vraelys is verdeel in vier verskillende onderafdelings syne uitleg, navigasie, inhoud en kommunikasie. Die bevindinge word aangebied en in detail beskryf. Aanbevelings in terme van die bevindinge word bespreek.

Daar is bevind dat so 'n produk kan dien as 'n effektiewe bemarkingsmeganisme en dat dit funksionele kommunikasiekanale kan voorsien. Aanbevelings vir die verbetering van die produk, asook vir soortgelyke ontwikkeling, word gemaak.

Sleutelwoorde: "Future Trends" Laboratorium, Virtuele werkswinkel, Program in Interieurontwerp, bemarkingsmeganisme, kommunikasiefasiliteit, webwerf, multimedia, inligtingsbehoeftes.



Acknowledgements

I wish to express my deep appreciation to the following people:

- My Heavenly Father for life and for giving me the strength, endurance and ability to complete this thesis.
- My supervisor, Prof Johannes Cronjé for his guidance throughout the study and for his intuitive wisdom, which I shall take along on the way forward.
- Friedel, my dearest sister and best friend for her lifelong loyalty and friendship, her inspiration and motivation throughout this study.
- My dear mother, Yvonne for her loving care, support and editing of the document
- My special friend, Leon Rossouw for his unconditional friendship and his overall assistance during the course of this study.
- Helene Coetzee, for her endless patience during training sessions in the authoring tool and her the assistance with the web site.
- Renate Rossouw, for checking the grammar.
- All my wonderful friends, for their constant support and motivation.



Brief Table of Contents

Abstract		Page ii
Sameva	tting	iii
Acknowle	edgements	iv
Brief Tab	ple of Contents	v
Detailed	Table of Contents	Vi
List of Figures		xiii
List of Ta	ables	xiv
List of Ap	ppendices	xvi
1.	Introduction	1
2.	Literature review	14
3.	Design, development and production	71
4.	Evaluation	110
5.	Findings	119
6 .	Conclusions and recommendations	149
Referenc	es	176
Appendic	es ·	182



Detailed Table of Contents

		Page
Abstract		i
Samevat	•	ii
	edgements	iv
	le of Contents	•
	Table of Contents	V
List of Fig		xii
List of Ta		xi\
List of Ap	ppendices	xv
Chapter	1: Introduction	
1.1	Overview	1
1.1.1	Background	1
1.1.1.1	Program in Interior Design	2
1.1.1.2	Future Trends Research Laboratory	2
1.1.1.3	Virtual Workshop	3
1.2	Motivation for the study	4
1.2.1	Research problem	4
1.2.2	Purpose of the study	5
1.2.3	Objectives of the study	5
1.3	Research question	6
1.4	Value of this research	7
1.4.1	Value of the research in terms of external validity	7
1.4.2	Value of the web site as a product of the research	8
1.5	Research methodology	8
1.5.1	Research design	8
1.5.2	Population and sample	9
1.5.3	Data collection technique and methods	9
1.5.4	Research questions and data collection methods	9
1.6	Output	10
1.6.1	Description of the product	10
1.6.2	Description of the project team	10
1.7	Overview of research report	12
1.8	Limitations of this research	12



		Page
Chapter	2: Literature review	
2.1	Introduction	14
2.2	Presentation issues	16
2.2.1	Internet	16
2.2.1.1	Basic structure and function of the Internet	17
2.2.1.2	Solution to the Internet access problem	19
2.2.1.3	Summary	19
2.2.2	World Wide Web	19
2.2.2.1	Definition and description of the World Wide Web	19
2.2.2.2	Features of the World Wide Web	21
2.2.2.3	Summary	23
2.2.3	Multimedia	23
2.2.3.1	Hypertext	24
2.2.3.2	Hypermedia	25
2.3	Technological issues	27
2.3.1	Hardware	27
2.3.2	HTML/VRML	28
2.3.2.1	HTML	28
2.3.2.2	VRML	29
2.3.3	Browsers	30
2.3.4	Bandwidth	31
2.3.5	Authoring tool	32
2.3.6	CD-ROM	34
2.4	Design interface issues	34
2.4.1	User centered design	34
2.4.2	Navigation	35
2.4.2.1	Elements of navigation relevant during design of the product	37
2.4.2.2	Alternative methods of navigation	38
2.4.2.3	Summary	39
2.4.3	Design considerations	40
2.4.4	Multimedia building blocks	42
2.4.4.1	Text	42
2.4.4.2	Text attributes	43
2.4.4.3	Screen design	44
2.5	Marketing issues	46
2.5.1	Marketing plan	46
2.5.2	Target population	50
2.5.3	Promoting the site	51
2.5.3.1	Selection of domain name	52
2.5.3.2	Advertisement	53

		Page
2.5.3.3	Niche league techniques	53
2.5.3.4	Checklist for web site promotion	54
2.5.4	Links	55
2.5.5	Attracting visitors and increasing traffic to the web site	56
2.5.6	Search engines, directories and portals	57
2.5.6.1	Search engines	57
2.5.6.2	Directories	59
2.5.6.3	Portals	59
2.5.7	E-mail	62
2.5.7.1	Aliases	62
2.5.7.2	Filters	62
2.5.7.3	Databases	62
2.5.7.4	Auto-responders	63
2.5.7.5	Forms-to-email	63
2.5.7.6	Subscriptions	63
2.6.	Communication issues	64
2.6.1	E-mail	65
2.6.2	Discussion groups	65
2.6.3	Bulletin boards	66
2.6.4	Listservs	67
2.6.5	Chat rooms	67
2.6.6	Audio teleconferencing	68
2.6.7	Video teleconferencing	68
2.6.8	Business opportunities through information and communication	68
2.7	Summary of literature review	70
Chapter	3 : Design, Development and Production	
3.1	Overview	71
3.2	Introduction	73
3.3	Stage 1:Analysis	73
3.3.1	Purpose of the analysis	74
3.3.1.1	Goal analysis	74
3.3.1.2	Target population analysis	74
3.3.1.3	Task analysis	75
3.3.1.4	Information analysis	75
3.3.1.5	Media analysis	76
3.3.1.6	Project analysis	76
3.3.2	Limitations of the research project	76
3.3.3	Analysis method	77
3.3.3.1	Interviews	78

		Page
3.3.3.2	Research diary	79
3.3.3.3	Focus groups	79
3.3.3.4	Questionnaires	79
3.3.3.5	Literature review	80
3.3.4	Sample	80
3.3.5	Instrumentation	80
3.3.5.1	Questionnaire to potential students	80
3.3.5.2	Questionnaire to enrolled students	81
3.3.6	Results of the needs analysis	81
3.3.6.1	Goal analysis	81
3.3.6.2	Target analysis	82
3.3.6.3	Task analysis	86
3.3.6.4	Information analysis	87
3.3.6.5	Media analysis	87
3.3.6.6	Project analysis	87
3.4	Stage 2: Design	88
3.4.1	Introduction	88
3.4.2	Objectives	89
3.4.3	Considerations taken into account during design	90
3.4.3.1	Delivery system	90
3.4.3.2	Content and layout	91
3.4.3.3	Text design	92
3.4.3.4	Screen design	93
3.4.3.5	Navigation	94
3.4.4	Design specifications as applied in this project	94
3.5	Stage 3: Development	99
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	Phase 1	102
3.5.5.2	Evaluation of phase 1	103
3.5.5.3	Phase 2	103
3.5.5.4	Evaluation of phase 2	105
3.5.5.5	Phase 3	105
3.5.5.6	Evaluation of phase 3	106
3.5.5.7	Phase 4	106
3.6	Production	109



Chanter	4: Evaluation	Page
Chapter	4. Evaluation	
4.1	Executive overview	110
4.2	Introduction	112
4.3	Target population and sample	113
4.4	Data collection process	114
4.4.1	Instruments used	114
4.4.1.1	Questionnaire for target analysis - Open Day	114
4.4.1.2	Questionnaire for target analysis - Enrolled students	115
4.4.1.3	Evaluation questionnaire for students and CBT students	116
4.4.1.4	Evaluation questionnaire for experts	116
4.4.2	Collecting data	117
Chapter	5: Findings	
5.1	Introduction	119
5.2	Evaluation of the program	121
5.2.1	Instrument used	121
5.2.2	Description of the respondents	122
5.2.2.1	Students	122
5.2.2.2	Lecturers	122
5.2.2.3	CBT students	122
5.2.2.4	Experts	122
5.3	Findings	123
5.3.1	Students	123
5.3.1.1	Interpretation of students' results	125
5.3.2	Lecturers	126
5.3.2.1	Interpretation of lecturers' results	128
5.3.3	CBT students	129
5.3.3.1	Interpretation of CBT students' results	131
5.3.4	Experts	132
5.3.4.1	Interpretation of experts' results	134
5.3.5	Average results from the different respondent groups	138
5.3.6	Relevant target analysis results	140
5.3.6.1	Interpretation of results from questionnaires 1 and 2	140
5.4	Discussion of relevant findings	141
5.4.1	Design objective 1	142
5.4.2	Design objective 2	143



		Page
5.4.3	Design objective 3	144
5.4.4	Design objective 4	145
5.4.5	Summary on the findings regarding the design objectives	147
Chapte	r 6: Conclusions and Recommendations	
6.1	Introduction	149
6.2	Conclusions	149
6.2.1	Objective 1: Create a functional web site with sound design principles	152
6.2.1.1	Section: Layout	153
6.2.1.2	Section: Navigation	154
6.2.1.3	Section: Content	155
6.2.1.4	Summary	156
6.2.2	Objective 2: Design a site that serves a an effective marketing tool	156
6.2.2.1	Section: Layout	157
6.2.2.2	Section: Navigation	158
6.2.2.3	Summary	158
6.2.3	Objective 3: Establish a functional communication facility	159
6.2.3.1	Section: Layout	160
6.2.3.2	Communication support and ease of use	161
6.2.3.3	Summary	161
6.2.4	Objective 4: Ensure that the site is a functional and workable product	161
6.2.4.1	Section: Layout	163
6.2.4.2	Section: Navigation	164
6.2.4.3	Section: Content	165
6.2.4.4	Section: Communication, support and ease of use	166
6.2.4.5	Summary	167
6.3	Final conclusions	168
6.3.1	Layout	169
6.3.2	Navigation	169
6.3.3	Content	170
6.3.4	Communication, support and ease of use	170
6.4	Limitations of this study	170
6.5	Recommendations for improvement of this product	171
6.6	General recommendations for similar development	174
6.7	In conclusion	175



	Page
References	176
Appendices	182



List of Figures

		Page
Figure 2.1	Questions relevant to the research	15
Figure 2.2	The structure and layout of the Internet	17
Figure 2.3	Graphic display of the explosion of the Internet from 1981 to 2001	18
Figure 2.4	Retention rate of different mediums in relation to multimedia	25
Figure 3.1	Language abilities and preferences	84
Figure 3.2	Demographic results of the two target groups	84
Figure 3.3	Computer literacy of the two target groups (+)	85
Figure 3.4	Substantial factors regarding the total target group	85
Figure 3.5	Illustration of the potential web site	91
Figure 3.6	Example of the home page – Phase 1 (+)	103
Figure 3.7	Example of the home page - Phase 2 (+)	104
Figure 3.8	Example of the home page - Phase 3 (+)	106
Figure 3.9	Example of the home page – Phase 4 (†)	107
Figure 3.10	Example of the site map – Phase 4 (+)	108
Figure 3.11	Example of a structured page – Phase 4	108
Figure 5.1	Results of students regarding the web site	126
Figure 5.2	Results of lecturers regarding the web site	129
Figure 5.3	Results of CBT students regarding the web site	132
Figure 5.4	Results of experts regarding the web site	138
Figure 5.5	Summary of the results from all the respondents	139
Figure 6.1	Evaluation of issues related to design principles	152
Figure 6.2	Evaluation of issues related to effective marketing	157
Figure 6.3	Evaluation of issues related to functional communication facilities	160
Figure 6.4	Evaluation of issues related to functionality and workability of the site	163
Figure 6.5	Success profile of the final product	169



List of Appendices

		Page
Appendix A	Questionnaire 1: Potential target population (+)	182
Appendix B	Questionnaire 2: Target population analysis (†)	184
Appendix C	Questionnaire 3: Evaluation of prototype web site (†)	190
Appendix D	Questionnaire 4: Expert evaluation of prototype web site (†)	193



List of Tables

		Page
Table 1.1	Sub questions and issues to be addressed	7
Table 1.2	Research questions and the relevant data collection methods	10
Table 1.3	Activities of the researchers	11
Table 1.4	Brief discussion of each chapter	12
Table 2.1	Issues and sub topics	16
Table 2.2	Growth of the Internet from 1981 to 2001	18
Table 2.3	Four important components of the World Wide Web	21
Table 2.4	Features of the World Wide Web	22
Table 2.5	Considerations for the use of types of hypermedia	26
Table 2.6	Important features for an acceptable authoring tool	33
Table 2.7	Navigation structures used in multimedia projects	37
Table 2.8	Alternative navigation techniques	39
Table 2.9	Advice for the design of a web site	40
Table 2.10	Discussion of the different text attributes	43
Table 2.11	Elements of screen design	45
Table 2.12	Factors to consider when designing a web site as a marketing tool	47
Table 2.13	Discussion of factors as described in "Tips for writing"	48
Table 2.14	Discussion of factors as described by Wilson	49
Table 2.15	Discussion of factors as described by Ellsworth	50
Table 2.16	Issues to address when assessing the target population	51
Table 2.17	Important techniques in Web marketing	55
Table 2.18	Significant search engines, directories and portals	61
Table 2.19	Synchronous and asynchronous techniques	65
Table 3.1	Five basic questions for a needs assessment	71
Table 3.2	Different stages in the development process	72
Table 3.3	Data collection methods	77
Table 3.4	The different samples involved in the analyses	80
Table 3.5	Target population profile	83
Table 3.6	Task analysis results	87
Table 3.7	Descriptions from three known authors regarding design	89
Table 3.8	Design objectives	90
Table 3.9	Target group characteristics vs. client specifications	95
Table 3.10	Design implications vs. composition of the site design specifications	96
Table 3.11	Design specifications	97
Table 3.12	Comparison between different authoring tools	101
Table 4.1	Stages in the evaluation process	111
Table 4.2	Research sub questions	112
Table 4.3	Relation between the research questions and instruments used	117
Table 5.1	Questionnaire and related objective to be met	120
Table 5.2	Results from the students (†)	124



Table 5.3	Results from the lecturers (+)	127
Table 5.4	Results from CBT students (†)	130
Table 5.5	Results from experts (†)	133
Table 5.6	Average results from the different respondent groups	139
Table 5.7	Results from relevant questions in questionnaires 1 & 2	140
Table 5.8	Questions and comments indicating that the web site has been created with sound design principles	142
Table 5.9	Questions and comments indicating that the site serves as a marketing tool	143
Table 5.10	Evaluation of information regarding the appropriateness of the site as a marketing tool	144
Table 5.11	Questions and comments indicating that a functional communication facility is established	144
Table 5.12	Questions and comments indicating the validity for a functional communication facility.	145
Table 5.13	Questions and comments to verify that the final product is a functional and workable product	146
Table 6.1	Design objectives in relation to the sections and the applicable questions	150
Table 6.2	Summary of the outcomes of each respondent group	151
Table 6.3	Questions and average percentage of all respondents – Objective 1	152
Table 6.4	Questions and average percentage of all respondents – Objective 2	156
Table 6.5	Questions and average percentage of all respondents – Objective 3	159
Table 6.6	Evaluation of issues related to the functionality and workability of the site	162
Table 6.7	Design objectives, research questions and relevant percentages	168
Table 6.8	Design objectives and relevant recommendations	172



CHAPTER 1

INTRODUCTION

		Page
1.1	Overview	1
1.1.1	Background	1
1.1.1.1	Program in Interior Design	2
1.1.1.2	Future Trends Research Laboratory	3
1.1.1.3	Virtual Workshop	3
1.2	Motivation for the study	4
1.2.1	Research problem	4
1.2.2	Purpose of the study	5
1.2.3	Objectives of the study	5
1.3	Research question	6
1.4	Value of this research	7
1.4.1	Value of the research in terms of external validity	7
1.4.2	Value of the web site as a product of the research	8
1.5	Research methodology	8
1.5.1	Research design	8
1.5.2	Population and sample	9
1.5.3	Data collection technique and methods	9
1.5.4	Research questions and data collection methods	9
1.6	Output	10
1.6.1	Description of the product	10
1.6.2	Description of the project team	10
1.7	Overview of research report	12
1.8	Limitations of this research	13



CHAPTER 1

INTRODUCTION

1.1 Overview

This thesis reports on the research done to determine the following:

- Different options to design and develop a web site to serve as a functional marketing tool.
- Ways of utilising a web site to enable universal communication, especially regarding marketing issues.

Geography has ceased to be a barrier as a result of the Internet. Until 1993 the Internet was largely text-based as there was no graphic user interface, but the beginning of multimedia has led to the Web becoming the most popular Internet tool for marketing and advertising. (Ellsworth & Ellsworth, 1995:256; Wilson, 1996a)

The real promise of the Internet is the ability to extend the 'business' beyond the present market area.

Using the Web as a marketing tool has numerous advantages and benefits such as:

- Instant updating of information.
- Global exposure and visibility.
- Provides time saving activity.
- Significantly less expensive and more accurate.
- Possibility of interaction by means of different communication facilities.

(Ellsworth & Ellsworth, 1995:256-271; Marketing on the Internet, 2000)



"Marketing is a process of promoting, selling and distributing products or services from producer to consumer." (Baroudi & Levine, 1995:77)

To benefit from marketing, a proper and in-depth understanding of product and/or service and consumer is essential. Therefore an effective marketing tool has to be in place before a marketing campaign can be launched.

Effective communication is the cornerstone of successful marketing. (Ellsworth, 1995:58; Tips for writing.., 2000).

The Internet is an **international** network of computers, which is readily accessible. Therefore countries, industries and companies are no longer isolated. Across the globe, technical innovations and cutting-edge business practices generate success. Free trade agreements, common markets and future world-wide treaties will also increase competitive pressures. Even small- and medium-sized firms must have an international perspective to succeed.

National economic survival also increasingly demands a global approach. In today's world-wide market place all the major players in the economy--business, labour, educational institutions and governments--must cooperate to increase competitiveness locally, nationally as well as internationally.

(Strategic Research Themes, 2001)

Locally, participation in activities on the Internet and WWW, especially marketing and communication has become a very important aspect of a sound business practice. Involvement in the cyber environment immediately provides endless international exposure.

For optimal visibility in a fast moving, competitive market, a partnership with the WWW and more specifically the Internet is imperative.

The proposed web site is a product of two different studies from different viewpoints. This study covers one part of the research. A discussion of the total research team follows in 1.6.2.



1.1.1 Background

1.1.1.1 <u>Program in Interior Design</u>

According to the research diary (client interview) Program in Interior and Product Design resorted as a sub division of the degree in Home Economics up to 1994 and this field was not regarded as a feasible career as such. Therefore a lack of focus in the training as well as an insufficient curriculum resulted in meagre career opportunities.

In 1995 the Program in Interior and Product Design (known as the **Program** during the course of the research) was introduced at the University of Pretoria and this resulted in multiple career opportunities. The name has since changed to Program in Interior Design at the beginning of the year 2000. The focus changed to design, communication and management, strongly supported by views on the interdisciplinary nature of realities in the professional environment. Careers such as Interior and Product Design, Design Marketing and Architectural Design are within the spectrum of choices.

1.1.1.2 <u>Future Trends Research Laboratory (FTR Lab)</u>

A definite need for an interdisciplinary co-operation between technology and strategic design arose, due to the highly competitive environment in which we live. The Future Trends Research Laboratory was initiated to create a meaningful relationship between the needs encountered in the industry on the one hand and academic research on the other.

The FTR Lab has distinctive objectives, which have to be adhered to. The design and development of the products have to:

- be typically South African.
- be market driven, ethically accountable,
- create an interactive interface between the principles of design, the industry and the technology in general; and
- maintain a balance between aesthetic added value, the applicable technology and economic reality.



The FTR Laboratory operates as a self-sufficient research unit within the **Program** and operates in close contact with relevant postgraduate research groups. In this way the students receive optimal opportunities of establishing networks for their future careers.

1.1.1.3 <u>Virtual Workshop</u>

The Virtual Workshop is a specific research group, which also collaborates with the FTR Laboratory. This group is not static by any means and includes participation of students from universities across the globe. Specific projects arguments and exhibitions are the main objectives.

The FTR Laboratory and the Virtual workshop are integrated components of the **Program** and would benefit from any future means of marketing and communication facilities. Therefore they are mentioned and briefly described as separate entities.

1.2 Motivation for the study

1.2.1 Research problem

As a result of the nature of the design environment which is a fast moving, process driven, competitive industry, it is of cardinal importance to keep and stay ahead, because the effectiveness of a design process depends on rapid, correct and clear responses.

At the commencement of this study the **Program** had no specific marketing tool, in fact no market strategy existed. Because of the inadequate marketing "tools", the communication, especially regarding the marketing issues, was extremely insufficient. The lack of communication as well as the absence of proper marketing was visible in different areas as could be seen in some of the following problems that were encountered:

The Open day of the University during September 2000 for example was advertised by means of posters against lampposts in the streets of Pretoria, which immediately excluded potential interested parties in other geographical areas. Alternative means of advertising included word of mouth, flyers and announcements at schools. This however was insufficient as no important information was conveyed and interested

. Chapter 1 - Introduction



parties had to struggle to obtain relevant information regarding the **Open** day. This resulted in poor attendance.

- The industry did not benefit from any alliance with the Program because of limited or no advertisements or exposure.
- Traditional ways of marketing did not reach the potential students located all over the country.
- Interested parties abroad such as design orientated companies and academic institutions did not have easy access to achievements within the Program.
- Communication facilities for sufficient contact between the industry, FTR Laboratory,
 Virtual Workshop and the Program were limited.
- Global communication for the purpose of exposure as well as cross-pollination within the design environment was non-existent.
- Advertising and marketing are expensive.

The **Program** is a dynamic entity and has so much to give to potential students and to the design world. By means of a web site as the marketing tool, the 110 students currently enrolled (research diary) could multiply and the **Program** could expand, thus serving the University of Pretoria and the design industry.

Communication facilities in aid of marketing, whereby students, lecturers as well as the **Program** would benefit, had to be established. Constant and available communication would be beneficial to the participants in the **Program** and it would be indispensable for the proper operation of a web site as an optimal marketing tool.

1.2.2 Purpose of the study

The purpose of this study was to create a workable product to serve as a functional marketing tool and provide communication facilities to optimise the marketing function and allow global communication.

. Chapter 1 - Introduction



1.2.3 Objectives of the study

The specific objectives of this study were to:

- Build a workable and functional web site that adheres to the basic design principles.
- Create the web site to serve as an optimal marketing tool.
- Provide communication facilities with regards to marketing.
- Provide interactive networking with the industry and relevant professional entities e.g. designers, producers, providers and end users who are dependent on one another for information.
- Expand opportunities for interaction with other academic institutions and the industry, locally as well as internationally.
- Establish links to relevant sites on the Web.
- Create a "links" page from where users can find different services related to design issues.
- Provide a facility where information can easily be altered or updated.

1.3 Research question

The main research question 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 1.1 displays the sub questions that had to be addressed in order for the main research question to be answered.

. Chapter 1 - Introduction



Table 1.1 Sub questions and issues to be addressed

Issues	Sub questions
Information needs	What are the characteristics of the target population?
Design issues	What methods should be applied to ensure the effectiveness of the site? What are the design considerations? What are the practical considerations?
Marketing	What methods should be applied for optimal exposure to web-based marketing?
Communication	How can efficient and effective communication be obtained?
Evaluation/Findings	How can functionality and sustainability be ensured? Does the site prove to be functional? What are the prerequisites for sustainability?

1.4 Value of this research

1.4.1 The value of the research in terms of external validity

The contributions of this research study are the following:

- Availability of a basic structure for a workable marketing tool.
- Displays the value of functional communication facilities integrated with a marketing tool.
- Provide an institution of the same nature with guidelines for establishing a multipurpose web site.
- Indicate the importance of a web presence for exposure and visibility.

1.4.2 The value of the web site as a product of the research.

The value of the research for the **Program** is the following:



- Information about the likes and dislikes of the general target population will be available for future use.
- A functional marketing tool will provide exposure and probably lead to growth in student numbers.
- Active links to relevant web sites will be available.
- Structured information, completed projects and student work will be available for viewing.
- The means of communication will be available 24 hours a day at the convenience of any interested party.
- The web site will serve as a constant line for the exchanging of information and for keeping track of development and changes, in the industry.
- The Program will be able to stay on track with new trends and will be able to give input on a daily basis.
- By means of e-mail, discussion groups and other communication tools everybody in the **Program** will be able to converse with one another. These facilities will be an asset to the FTR Laboratory, since the people involved are from different environments and do not have daily contact with one another.

Specialists from different professions get together for a specific project. Creating an ultra modern bar chair for instance would require the skills of people in different professions. Without having to physically meet on a regular basis the progress could be communicated by mail or by placing the information on the web site.

1.5 Research methodology

1.5.1 Research design

Evaluation research was used. This is a form of social research where general rules apply and the outcomes are based on probabilities. Theoretical, as well as empirical principles were involved, because of observations and measurements of reality. Causal as well as general relations were applicable.

This study follows a participant-oriented model, because of the importance of the evaluation participants. (Trochim, 1999)

. Chapter 1 - Introduction



1.5.2 Population and sample

The target population for this research was:

- Current and potential students at the University of Pretoria.
- Lecturers from the University of Pretoria.
- Experts in the field of web design.

1.5.3 Data collection technique and methods

The literature review was used as the data collection technique. The data was collected through the process of data and methodological triangulation. (Reeves, 1994)

Data triangulation implies a collection of data from different sources where one source is used to validate the data from the other.

In methodological triangulation different quantitative instruments are utilised.

The data collection methods were the following:

- Literature: books, articles, on-line articles on the Internet
- Discussions with the appropriate people involved with the Program.
- Questionnaires.
- Focus Groups.
- Interviews.
- Research diary (Information gathered throughout the study)

1.5.4 Research questions and data collection methods

Table 1.2 displays the different research questions and the collection methods used.

. Chapter 1 - Introduction

Table 1.2 Research questions and the relevant collection methods.

Topics addressed	Literature	Diary	Questionnaire	Focus group	Interview
Information needs What are the characteristics of the target population? Computer literacy? Ability/aptitude? What are the needs of the different target groups?		×	×××	×	×
Design Issues What methods should be applied to ensure the effectiveness of the site? What are the design considerations? What are the practical considerations?	×	×	×	×	×
Marketing issues What methods should be applied to create a web-based marketing tool?	×		×	×	
Communication issues How can efficient and effective communication be obtained?	×		×		
How is functionality and sustainability ensured? Does the site prove to be	×		×	×	×
functional?What are the prerequisites for sustainability?	×	×		×	^

1.6 Output

1.6.1 Description of the product

The final product is an interactive web site with the main aim to serve as a marketing tool, providing exposure and visibility and a communication facility to further marketing issues and provide global communication.

1.6.2 Description of the project team

The research for the project as a whole was done from two different perspectives and points

of focus.

- Marketing and global communication.
- Education matters and internal communication regarding the academic institution.

Two researchers, M. Meter and F. van Zyl were involved. M. Meter handled the marketing and external communication issues, while F. van Zyl was responsible for the education and communication matters within the academic institution.

The final product had to answer to all the needs of the client. Therefore the researchers (who were also the designers and developers) had to work extremely close together to ensure a smooth integration of their respective issues and delivering a diverse and workable product.

All shared information throughout this study is indicated by the following symbol: [†]

Table 1.3, indicates the different issues handled by each researcher and also indicates where the researchers worked together and had shared interests.

Table 1.3 Activities of the researchers [†]

Phases	F. van Zyl	M. Meter	Comments
Analysis			
- Goal	-Promote effective learning -Create a communication facility for students and lecturers	-Create an effective marketing toolCreate external and global communication channels	Two perspectives : Academic enhancement Provision of a marketing tool for the institution
- Target	- Potential students -Enrolled students in different year groups -Lecturers	-Potential students -Individuals in the Design Industry -Any interested party /web surfer	Different groups are applicable to accommodate the two perspectives.
- Content/ Information	-Content provided by client	-Relevant information provided by client	Content regarding academic issues. Information regarding design related fields for marketing purposes.
Design			
-Objectives	-Effective internal communication facilities -Tools to stimulate and enhance learning.	-Effective marketing tool -Relevant communication facilities	Objectives from the two perspectives are integrated in the design phase.
-Specifications	-Education and internal communication according to the literature.	-Enhance marketing and communication globally according to the literature.	Refer to Literature Review (Chapter 2)

Table 1.3 (continued)

Phases	F. van Zyl	M. Meter	Comments	
Development				
-Program editor -Delivery system	-Dreamweaver -WWW, Internet, CD	-Dreamweaver - WWW, Internet, CD	The decision of both researchers. Decision of client and both researchers	
-Prototype	-Create web site according to specifications	- Create web site according to specifications	The researchers worked as a team in the design, development and production of the prototype.	
-Formative evaluation	-Discussions with the client, enrolled students and lecturers.	-Discussions with the client, independent marketing consultants, potential students, individuals in the Design Industry and interested parties.	Alpha testing by the different groups for the different issues. (e.g. education matters, communication matters, marketing)	
-Summative evaluation	-Questionnaire- Evaluation of the prototype	-Questionnaire- Evaluation of the prototype	Both researchers used the same questionnaire. Specific questions in the single questionnaire addressed the different issues. (Refer to Chapter 5, Table 5.1)	

1.7 Overview of research report

The study comprises of six chapters, which are displayed and briefly discussed in Table 1.4.

Table 1.4 Brief discussion of each chapter

Chapter	Name of chapter	Description
Chapter 1	Introduction	This chapter contains a brief overview of the Program , portrays the motivation, purpose and objectives of the study and displays the research questions that have to be answered for this study to be successful.
Chapter 2	Literature review	Information regarding the following is provided: Internet, World Wide Web, relevant multimedia elements for building web sites. Marketing issues. Communication in the marketing environment.

Table 1.4 (continued)

Chapter	Name of chapter	Description
Chapter 3	Design, development and production	The different analyses, the methods uses for each analysis, and the results of each analysis are discussed. The different considerations that were taken into account as well as the design specifications applicable in the design of the product were described in detail. During the development phase the researcher provided a detailed description of all the steps taken during the different phases, an overview of the authoring tool used and discussions on the evaluation and testing phases.
Chapter 4	Evaluation	The following were discussed in the course of this chapter: Formative and summative evaluations. Samples and instruments used. Relationships between the research questions and the questionnaires. Manner of data collection.
Chapter 5	Findings	This chapter reports on the findings of the summative evaluation phase. Descriptions of the instrument used as well as the different groups of respondents are provided. Results of the different groups were interpreted and compared
Chapter 6	Conclusions and recommendations	The outcomes of the results received in Chapter 5 are discussed under the different objectives and average percentages are used in the conclusions. Recommendations are provided for improvement of the product and also for future research in the same field.

1.8 Limitations of this research

- Initially the Program was part of the Department of Engineering and a web site had to be constructed within the rules and regulations of the University of Pretoria and the Department of Engineering.
- Since the beginning of 2000 the Program was incorporated in the School of the Built Environment and presently resides with the Department of Architecture and Landscape Architecture. Again the web site had to adhere to different rules and regulations, not yet clearly defined. Therefore the researcher had to use a very basic structure in the design of the site to allow for changes in future.

Additional limitations throughout the course of the study are discussed in Chapter 6.



CHAPTER 2

LITERATURE REVIEW

HAR		Page
2.1	Introduction	14
2.2	Presentation issues	16
2.2.1	Internet	16
2.2.1.1	Basic structure and function of the Internet	17
2.2.1.2	Solution to the Internet access problem	19
2.2.1.3	Summary	19
2.2.2	World Wide Web	19
2.2.2.1	Definition and description of the World Wide Web	19
2.2.2.2	Features of the World Wide Web	21
2.2.2.3	Summary	23
2.2.3	Multimedia	23
2.2.3.1	Hypertext	24
2.2.3.2	Hypermedia	25
2.3	Technological issues	27
2.3.1	Hardware	27
2.3.2	HTML/VRML	28
2.3.2.1	HTML	28
2.3.2.2	VRML	29
2.3.3	Browsers	30
2.3.4	Bandwidth	31
2.3.5	Authoring tool	32
2.3.6	CD-ROM	34
2.4	Design interface issues	34
2.4.1	User centered design	34
2.4.2	Navigation	35
2.4.2.1	Elements of navigation relevant during design of the product	37
2.4.2.2	Alternative methods of navigation	38
2.4.2.3	Summary	39
2.4.3	Design considerations	40
2.4.4	Multimedia building blocks	42
2.4.4.1	Text	42
2.4.4.2	Text attributes	43
2.4.4.3	Screen design	44
2.5	Marketing issues	46
2.5.1	Marketing plan	46
2.5.2	Target population	50
2.5.3	Promoting the site	51
2.5.3.1	Selection of domain name	52
2.5.3.2	Advertisement	53

COLUMN TO		Page
2.5.3.3	Niche league techniques	53
2.5.3.4	Checklist for web site promotion	54
2.5.4	Links	55
2.5.5	Attracting visitors and increasing traffic to the web site	56
2.5.6	Search engines, directories and portals	57
2.5.6.1	Search engines	57
2.5.6.2	<u>Directories</u>	59
2.5.6.3	Portals	59
2.5.7	E-mail	62
2.5.7.1	Aliases	62
2.5.7.2	<u>Filters</u>	62
2.5.7.3	<u>Databases</u>	62
2.5.7.4	<u>Auto-responders</u>	63
2.5.7.5	Forms-to-email	63
2.5.7.6	Subscriptions	63
2.6.	Communication issues	64
2.6.1	E-mail	65
2.6.2	Discussion groups	65
2.6.3	Bulletin boards	66
2.6.4	Listservs	67
2.6.5	Chat rooms	67
2.6.6	Audio teleconferencing	68
2.6.7	Video teleconferencing	68
2.6.8	Business opportunities through information and communication	68
2.7	Summary of literature review	70



CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter primarily deals with the gathering of information on all aspects to be considered when developing a successful web site, with specific reference to utilising the site as a marketing tool and providing a useful means of communication.

Secondly, the Internet as an entity and the World Wide Web as the vehicle of multimedia and thus web sites will be researched and discussed to indicate that the use of a web site is the most appropriate manner for functional communication and the ultimate marketing tool.

The success of a web site depends on the choices made during the initial planning, development and design phases of the project. By means of a thorough study of the literature, a substantial percentage of the research questions will be answered or at least partially dealt with. This implies that correct decisions have been made, substantiated or brought forward by the literature research.

Figure 2.1 displays the questions (as stipulated in Chapter 1) that have to be satisfactory answered in order for the web site and study to be successful.



Figure 2.1 Questions relevant to the research

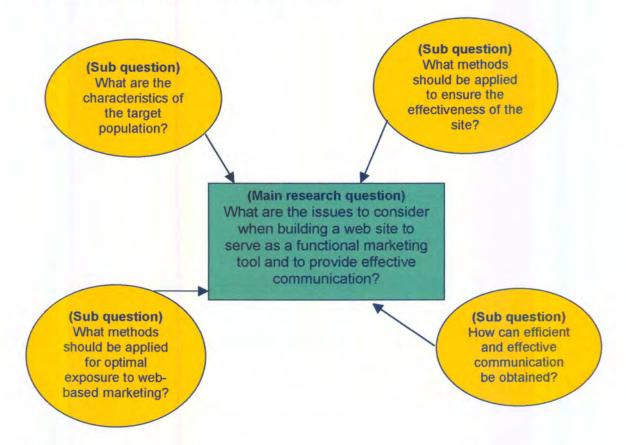


Table 2.1 displays the different issues concerned when building a usable and successful web site and also reveals the sub topics relevant to each issue that are discussed in the course of this chapter. As web marketing as an appropriate tool and communication channels via a web site are the primary matters of concern, issues regarding the presentation, technology and design interface on the World Wide Web are discussed to provide a sound foundation for the above- mentioned matters.



Table 2.1 Issues and sub topics

Issues	Topics per issue		
Presentation Issues	InternetWorld Wide Web (W W W)Multimedia		
Technological Issues	 Hardware Html/ VRML Browsers Authoring Tools 		
Design Interface Issues	 User centred design Navigation Design considerations Screen layout Building blocks 		
Marketing Issues	 Marketing plan Target population Promoting the site Links Attracting visitors and traffic Search engines, directories & portals E-mail 		
Communication Issues	 E-mail Discussion groups Bulletin boards Listservs Chat rooms Teleconferencing Business opportunities 		

2.2 Presentation issues

2.2.1 Internet

The basic idea of the Internet was developed during the period 1969 to the1970"s. Initially the Internet was a widespread interconnection of computers and computer networks all over the world using telephone lines and other long-distance methods, but this did not provide easy communication. The Internet is a set of standards and procedures by which all kinds of computers are connected together to communicate and share information. (Alessi & Trollip, 2001:139; Ellsworth & Ellsworth, 1995:3; Sachs & Stair, 1997:4)



Kennedy (1997:415) defines the Internet as: "a co-operatively run global collection of computer networks with a common addressing scheme"

2.2.1.1 Basic structure and function of the Internet

For many years the Internet was only a research network utilised and funded by the government specifically the U.S. Defence Department as well as universities. In 1983 the general idea of the Internet was still that of computer science research and the transfer of information back and forth and the access was then limited to a few experts in this field. The total network consisted of several hundred computers on a few local area networks.

Figure 2.2 displays an illustration of the layout and structure of the Internet, in order to realise the tremendous impact on the whole world especially regarding marketing and communication possibilities.

(Allesi &Trollip, 2001:373; Ellsworth & Ellsworth, 1995:3; Vaughan, 1998:375; Brian, 2001b)

Conventional Phone, Digital Subscriber, or Cable Modern Line

Home

Business

(Source: Brian, 2001b)

Figure 2.2 The structure and layout of the Internet

This network which began as a government research project, eventually became commercial and allowed anyone to take advantage of the facility. More and more private companies, businesses and individuals linked up to the Internet for different purposes such as communication, marketing, exposure etc. The explosive growth of the Internet

brought about one of the biggest changes in the world during the 1990s. Table 2.2

displays the extent of this explosion.

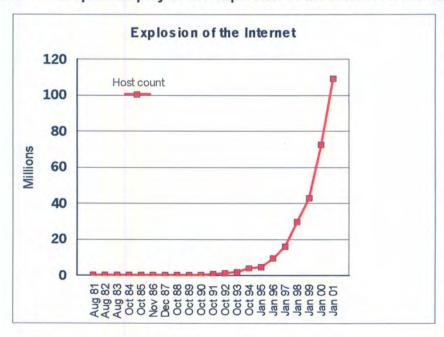
Table 2.2 Growth of the Internet from 1981 to 2001

Date	Host count	Date	Host count
August 1981	213	January 1992	727,000
May 1982	235	January 1993	1,313,000
August 1983	562	January 1994	2,217,000
October 1984	1,024	January 1995	4,852,000
October 1985	1,961	January 1996	9,472,000
February 1986	2,308	January 1997	16,146,000
December 1987	28,174	January 1998	29,670,000
July 1988	33,000	January 1999	43,230,000
July 1989	130,000	January 2000	72,398,092
October 1990	313,000	January 2001	109,574,429
January 1991	376,000		

(Summarised from Vaughan, 1998:376; Internet Software Consortium, 2001)

Figure 2.3 graphically displays the explosion of the Internet as set out in Table 2.2. The Internet has created a world market, because geography has ceased to be a barrier and even small businesses anywhere in the world have the opportunity to be a global company. (Wilson, 1999c; Patterson, 1997)

Figure 2.3 Graphic display of the explosion of the Internet from 1981 to 2001





2.2.1.2 Solution to the Internet access problem

Access to the Internet implies having access to all the main Internet systems such as FTP, e-mail, Gopher and the World Wide Web. The Internet was not the answer to easy communication and the comfortable transferring of images from one kind of computer to another. The Web, however, was the solution to the problem as a specific standard for encoding pages of text and images were produced, which provided easy communication between all kinds of computers.

(Allesi & Trollip, 2001:372; Ellsworth & Ellsworth, 1995:39; Patterson, 1997; Vaughan, 1998:391)

2.2.1.3 <u>Summary</u>

Statistics have shown that the Web is the largest and fastest growing part of the Internet. It has become the most attractive and functional marketing tool all around the world and has also become a primary means of communication amongst people. Therefore sound information regarding the Internet as well as the Web is important and relevant to this study and research.

(Allesi & Trollip, 2001:372; Ellsworth & Ellsworth, 1995:39)

2.2.2 World Wide Web (W W W)

2.2.2.1 <u>Definition and description of the World Wide Web</u>

"The Web represents the application of hypertext technology and a graphical interface to the Internet to retrieve information that is contained in specially formatted documents that may reside in the same computer or be distributed across many computers around the world." (World Wide Web, 2000)

Three elements are of importance:

Hypertext Markup Language (HTML).
 (Discussed in 2.3.2)



HyperText Transfer Protocol (HTTP)

The Internet uses a suite of protocols to control and direct the passing of data across the network called Transfer Control Protocol/Internet Protocol. (TCP/IP)
HTTP is the protocol used by the WWW to process and transfer HTML files.
Hypertext Transfer Protocol provides the following rules for the transaction between two computers on the Internet:

- 1. establishing a connection,
- 2. requesting the document to be sent,
- 3. sending of the document; and
- 4. closing the connection.

Universal Resource Locators (URLs)

This a standardised way to provide information about a file's name, the location of the computer on which the site is stored, where in that specific computer the data is stored and which Internet protocol must be used to access the file.

The Web was created as an aid for the Internet. The Web is a set of standards for storing and sharing information on the Internet to enable the use of information (text, pictures, sounds and animation) by any type of computer. Any form of information as described above is encoded and formatted in an agreed-upon manner to enable users with all types of computers to exchange and use the information. The Web can therefore be seen as a world-wide collection of millions of hypermedia computer files. It is also described as a large-scale system of computerised, interconnected hypermedia resources accessible from computers connected to it. (Alessi & Trollip, 2001:139; Clarke, 1998:2,7; Ellsworth & Ellsworth, 1995:39-41; World Wide Web, 2001)

The Web is graphic intensive and not a linear experience. Hypermedia computer files are designed to display text, graphics, photographs, video animation, digitised sound or any of these combinations. With the use of HTML (Hypertext Markup Language) this material is written and designed to appear on a web page with the use of a suitable web browser, such as Mosaic (the first browser software), Netscape's Navigator or Microsoft's Internet Explorer. (Alessi & Trollip, 2001:373; Patterson, 1997:4; Vacca, 1996)

Chapter 2 - Literature review



Table 2.3 displays the four components of the W W W as described by Sachs & Stair, (1997).

Table 2.3 Four important components of the World Wide Web

Web components	Activity	
Global Internet	To carry information	
Attached web servers	To hold the information	
Web browser software	To show the information	
Universal addressing scheme	To find the information	

Information as displayed in Table 2.3 communicate the fact that even though the above entities are separate, they function together to form an enormous information provider.

From a business point of view the Web enables the customer to visit the "show room" of a business and view the company's on-line colour brochure stored in "pages" or "files" which can be viewed in both text and pictures. The Web provides the advertiser with a way to introduce the business to the world in a series of "pages" connected by "links" The user may navigate through these "pages" and view as little or as much as interests him. (Wilson, 1998a)

2.2.2.2 Features of the World Wide Web

The main advantage of the Web is that the information is readily obtainable, the publication and distribution thereof is easily facilitated and the updating is timeous. The Web is in actual fact a set of standards and software and provides the way of easy Internet use, because it provides platform independence, which implicates compatibility with every type of computer and operating system.

(Alessi & Trollip, 2001:139; 374; Clarke, 1998:2,7; Ellsworth & Ellsworth, 1995:39-45; Vaughan, 1998:398, World Wide Web, 2001)

Apart from text and images, the Web has different features, which add to its uniqueness, diversity and functionality.

Multimedia is a combination of different features such as animation, two- and three-dimensional graphics, video, audio and photo images and text. The above media should be applied with caution to enhance the use of the Web and not result in a user interface that is more difficult for the user to use and understand. (Multimedia, 2000)

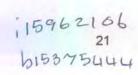


Table 2.4 displays different features of the World Wide Web and provides the advantages, the disadvantages and the implications of each on in discussion.

Table 2.4 Features of the World Wide Web

Advantage	Disadvantage	Implications
Gain attention of the user. Give the user a better understanding of the	Permanent moving objects interfere with the concentration of the user.	Do not use permanent moving objects, except for a very particular reason.
spatial structure of a 3-D object.	Overpowering effect on the peripheral vision.	Download time should not be longer than 15 seconds.
	Size cause delay in download time.	Use of animation has to be functional.
Visual impact- colour. Attract attention-explain.	Large graphics cause slow server response time.(download time)	Minimize graphics and amount thereof. Use dynamic HTML instead of applets.
Functional for live impressions of a person.	Bandwidth problems. Poor production values	Use professional quality audio equipment and
Trailers of shows and	defeat the object.	professional service. Users do not tolerate poor video.
movies.	Long download time.	Download time should not be longer than 15 seconds.
Excellent to teach pronunciation.	Not advisable for hearing-impaired users.	Ensure capability of stopping and rewinding.
on bandwidth.	Quality has to be good.	Make provision for the hearing-impaired.
personality makes sites more attractive.	Sound may not be available on all computers.	Keep in mind the sound possibilities of the users" computers.
Users have a sense of knowing where they are.	Poor navigation can cause a user to get lost.	Appropriate navigation aids.
Enable users to go back and forth.		Consistency and clarity.
Represent images that are too large to download.	Hard to interpret as the detail and meaning in context are lost in the minimizing process.	Use relevance- enhanced image reduction. (crop and scale)
Important information regarding a specific topic may need an extent of scrolling.	Only 10% of the users scroll beyond information visible on the screen.	Most important information; navigation within the first screen. Limit scrolling to the
	Gain attention of the user. Give the user a better understanding of the spatial structure of a 3-D object. Visual impact- colour. Attract attention-explain. Functional for live impressions of a person. Show things that move. Trailers of shows and movies. Excellent to teach pronunciation. Files are smaller; easier on bandwidth. Some amount of personality makes sites more attractive. Users have a sense of knowing where they are. Enable users to go back and forth. Represent images that are too large to download. Important information regarding a specific topic may need an	Gain attention of the user. Give the user a better understanding of the spatial structure of a 3-D object. Visual impact- colour. Attract attention-explain. Functional for live impressions of a person. Show things that move. Trailers of shows and movies. Excellent to teach pronunciation. Files are smaller; easier on bandwidth. Some amount of personality makes sites more attractive. Users have a sense of knowing where they are. Enable users to go back and forth. Represent images that are too large to download. Important information regarding a specific topic may need an

(Summary from: Allesi & Trollip, 2001; Nielsen, 1996a; Nielsen, 1999b; Vaughan, 1998)



2.2.2.3 Summary

Web sites are in actual fact Internet sites and use HTML tags to create multimedia documents by means of the different features displayed in Table 2.4. With the use of a browser, which translates the HTML into the text, graphical images and hypertext, the information is provided on any computer screen across the world.

The Web is therefore the ideal manner in which global communication can be facilitated and the recommended tool for marketing and presentation activities.

2.2.3 Multimedia

Multimedia is a combination of multiple forms of communication, such as text, audio, video, sound, animation and graphics delivered by a computer or some electronic means. It is a fundamental shift in how we present and conceive information. Together the information forms a superhighway which affects the way humans learn, work, communicate and even relax. (Vaughan, 1998; Willis, 1995; Schwier & Misanchuk; 1993:6; Phillips, 1997:8, Petersen, 1998:1)

Schwier & Misanchuk (1993:5) elaborate on this matter and describes multimedia as instructional, segmented, intentionally designed and coherent. He also states that multimedia is interactive when it is intentionally designed and the user becomes involved. Interactive multimedia is a "hybrid technology". This implies the integration of linked materials, which allows the user to browse and navigate through these materials by means of various ways of searching and sorting. Multimedia empowers the user to control the environment by means of the computer. The advantage of multimedia with the mixture of resources allows the designer to choose an appropriate medium to convey a specific message such as:

- text for thought,
- graphics for spatial relations, and
- animation for dynamic information.

(Phillips, 1997:11; Petersen, 1998:1)

One of the greatest advantages of multimedia instruction is the ability to simulate and visualise, especially by means of animation and graphics. This is appropriate in a tertiary curriculum e.g. laboratory or workshop where learners are required to understand



complex, abstract or dynamic processes and relationships between moving objects. (Phillips, 1997:11)

With this tool learners are allowed to visualise processes and construct mental models which assist the understanding of systems and their use in the explanation and prediction.

Multimedia is applied in many areas e.g. reference works, games, education, advertising, marketing, information gathering and network communication (such as video conferencing and mail).

The mixture of the different elements (graphics, animation, sound etc.) woven together in relationship with one another improves information retention. Therefore multimedia, which holds attention and creates interest, is more favourable than the traditional "text-only" computer interfaces. (Vaughan, 1998:8)

2.2.3.1 <u>Hypertext</u>

Hypertext is described as text showing relationships between parts of information where links or pointers between passages of text exist, which enables the user to jump to any related articles. This is a vast improvement over linear paper documents, because apart from the fact that hypertext allows links to other pieces of relevant information, it also provides for navigation facilities such as backtracking, clickable indexes, tables of content, searching or to initiate some kind of interaction. Hypertext links concepts within text by using "hotwords". This is an active word, usually distinguished from other words by underlining them or displaying them in a different colour. When the user clicks on the underlined text, the relevant command is executed.

(Alessi & Trollip, 2001:138; Phillips, 1997; Shneiderman, 1998:553)

Examples of golden rules regarding functional hypertext, are the following:

- A large chunk of information has to be organised into numerous fragments.
- The fragments must relate to one another.
- The user may need only a small portion of the information at any give time.

Inappropriate or poor hypertext, on the other hand, may ruin a potentially functional web site.



The following common mistakes should be avoided:

- Too many links.
- Breaking text into unlogical fragments.
- Inadequate tables of contents.
- Too many long and uninteresting articles.

(Scheiderman, 1998:556)

2.2.3.2 <u>Hypermedia</u>

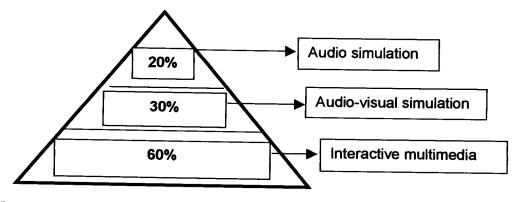
Interactive multimedia becomes hypermedia when the user is presented with a structure of linked elements through which he can navigate independently. Hypermedia is the extension of hyperlinks. Linked information is linked to collections of relevant information, including text, video, sound, photographs etc. By means of the World Wide Web hypermedia is extended to a gigantic network of computers, which enables millions of users to retrieve and create multimedia material from anywhere in the world in a matter of seconds.

(Alessi & Trollip, 2001; 138; Shneiderman, 1998:553)

Studies show that multimedia has a greater retention rate than most of the other methods/tools used. (Vaughan, 1998:8)

Figure 2.4 reflects the effectiveness of multimedia as a marketing and presentation tool.

Figure 2.4 Retention rate of different mediums in relation to multimedia



(Jay Sandom, Einstein & Sandom, cited by Vaughan, 1998:10)

A web site, created by using multimedia, would therefore be the ideal vehicle to achieve optimal marketing possibilities and create an endless means of global communication by providing the online facility. (Vaughan, 1998:8)

A structure of hypermedia is not navigation *per se* but has a navigational structure. It consists of many "pages" containing objects (e.g. text, images, and graphics) that are linked to other objects or "pages". This is known as a hypermedia structured program and it does not have a traditional organisation of pages in a sequence. A hypermedia program consists of the following:

- A database of information.
- Presentation of information via multiple media such as audio, video and text.
- Multiple ways of navigation, including hyperlinks.

(Alessi & Trollip, 2001:138-145; Vaughan, 1998:228)

The secret of hypermedia is to apply the different elements correctly and functionally.

Following in Table 2.5 are important considerations for using the different types included in hypermedia.

Table 2.5 Considerations for the use of types of hypermedia

Hypermedia types	Considerations for use		
rrypermedia types	Advantages	Disadvantages	
Text	 Process info at user's preferred rate. Good for high-ability readers. Easy to search. Can be formatted in many ways. Easy printable. Easy displayable on computer screen. 	 Difficult for poor readers. Does not attract attention well. Incompatible with video and audio. 	
Still <mark>pictorial image</mark> s	 Process at preferred rate. Attract attention. Add professional look to program. More memorable. Language independent. Combine with text. Convey spatial information well. 	 More difficult to print. May require artistic development. 	



Umarmadia alamanta	Considerations for use	
Hypermedia elements	Advantages	Disadvantages
Aural information (Voice, music & sound effects)	 Attract attention. Combines with pictorial and motion images. Good for describing procedural information. Good for conveying verbal information to poor readers. Good for narrative information. Relatively inexpensive and easy to design. 	 Process rate might not suit the user. Does not combine well with textual information. Not good for conveying spatial information.
Motion images (Video & animation)	 Attract attention. Improve attitudes and motivation. Convey spatial and temporal information well. Combine well with audio. 	 Processing at a rate that might not suit all users. Do not combine well with text. Costly to design. Expensive to produce.

2.3 Technological issues

2.3.1 Hardware

"Selection of the proper platform for developing your multimedia project may be based on personal preference, budget constraints, delivery requirements, type of material and content in the project." (Vaughan, 1998:53)

Although the Macintosh, has been, by definition, a multimedia computer, the Windows Multimedia PC platform (MPC) is more commonly used in South Africa and complies with the standard specifications required for multimedia. A MPC is a standard and not a computer; therefore components can be separately assembled to meet the requirements of the user.

A common constraint in the multimedia environment is the hardware on which the product should run. Most web sites generally need powerful computers with sound cards and other peripherals.

Multimedia authoring consume a great deal of memory. Therefore provision has to be made for at least the minimum hardware requirements necessary.



The MPC2 standard is acceptable for basic multimedia. It consists of the following elements:

CPU: 25 MHz 486SX.

Hard disc: 160 Mb.

r Ram: 4 Mb,

CD-ROM: double speed (300kb per second).

Video card: 640x480 with 65,536 colours,

■ Floppy disc: 3 1/2 inch.

Sound card: 16-bit with 8-note synthesiser; and

MIDI playback

(Vaughan, 1998:54-60)

As the building becomes more complex and include more and larger graphics and audio files, the necessary adaptations have to be made to suit the requirements of the product.

The most important factor to remember is that the product has to be available to the end-user. Computer hardware issues and constraints of the end-user, which will impact on the delivery and operation of the final product, have to be dealt with beforehand. (Alessi & Trollip, 2001:442; Ellsworth & Ellsworth, 1995:379-388; Vaughan, 1998:51-91)

2.3.2 HTML / VRML

HTML is the core of information that shapes and forms the nature of multimedia on the Web, while VRML is an independent environment designed to take care of high-performance 3-D worlds. A web site can survive without the presence of VRML, but not without HTML.

2.3.2.1 HTML

Hypertext Markup Language (HTML) is the underlying programming standard of the World Wide Web. HTML organises text, pictures and all other information in a hypertext fashion and serves as the underlying framework of the WWW. This implies that any piece of information can be linked to any other piece of information on any computer connected to the Internet.



An HTML document can contain hyperlinks that refer to other documents in the same or in other web site. Users are thus able to link and move around from one site to another. The only condition being the subscription to the standards of the Web.

By means of HTML, text and graphics can be displayed together using a 2-D page metaphor.

The creation of the Web and HTML brought hypertext and hypermedia into common use. (Alessi & Trollip, 2001: 139; Patterson, 1997:116; Vacca, 1996:1-10; Vaughan, 1998:392)

2.3.2.2 VRML

Virtual Reality Modelling Language (VRML) is a 3-D navigation specification. It enables the creation of 3-D sites; e.g. chat rooms, which creates a very powerful medium for the exchange of information.

Virtual Reality can enhance a web site in the following instances:

- Information visualisation, which could be used internally on the Intranet or globally on the Internet for a better and easier understanding of complex information.
- Model inspection where the existence of a database, composed of a well-defined format to represent 3-D information makes it possible to move information from a conceptual design phase to manufacturing without losses.
- Flying through 3-D worlds could be functionally applied VRML for entertainment or advertising e.g. selecting seats at an auditorium or reviewing accommodation.
- Visualise database information in real-time.
- Participate in multi-player virtual reality games.
- Walk through virtual product showrooms with other on-line shoppers.

VRML is an excellent advertising vehicle because it can lead a user to an economic transaction and it provides the user with experiences for which he/she will be willing to pay e.g. show houses over a long distance and architectural models. It provides a freedom of choice regarding the perspective from which angle to view the world. (Patterson, 1997:93; Vaughan, 1998:421; Vacca, 1996:35)



2.3.3 Browsers

A web browser is the generic term for a software program that enables navigation on the Web. These programs act as an interface between the user and the Internet. A browser can run on a personal computer, which is connected, to an Internet access provider via a modern. Browsers were initially designed as interfaces for the World Wide Web, but most are now able to also interact directly with all the other Internet tools and systems.

When reading in a URL or site name into the browser, the following steps take place behind the scenes before the web page appear on the screen:

- The browser breaks down the URL into 3 parts:
 - 1. The protocol (http)
 - 2. The server name (e.g. www.encyclopedia.com)
 - 3. The file name (e.g. articlesnew/50589.html)
- The browser communicates with a server name to change the server name to an IP address, which in turn connects to the server at that specific address.
- After the HTTP protocol the browser requests the total file from the server.
- The server in turn sends the HTML text for the specific requested page to the browser.
- The browser read and translates the HTML tags and displays the page onto the screen.

Two groups of browsers are of importance:

- text-mode (words only, no pictures); and
- GUI(graphical user interface)

For the purpose of this study the latter is applicable.

GUI browsers are easier to master and faster to control. Most users make use of the custom browsers offered by Internet Service Providers, such as *Netscape Navigator* (50% usability) and *Internet Explorer* (23% usability). Mosaic, Cello, Chameleon and SlipKnot are other examples of other browsers available.

Chapter 2 - Literature review



Because not all users have the latest versions of the software there are a few issues to consider in the design and development process:

- Limit the use of some components that does not comply with the HTML, e.g. video and motion.
- Check the compatibility of the different hardware platforms to ensure that the users have functional access to the web sites.
- Direct users to different screens for different browsers.
- Test each HTML document using as many browsers as possible.
- Do the testing with the lowest commonly used resolution. (e.g. standard 640x480 VGA mode)

(Brian, 2001b; Coetzee, 2000:77;, Ellsworth & Ellsworth, 1995:67-109, 242; Patterson, 1997:119, Vaughan, 1998:398-399: 477)

2.3.4 Bandwidth

"Satisfaction with the Internet is a function of connection speed and the size of the data elements accessed."

Bandwidth

= Satisfaction

File size

(Vaughan, 1998: 407)

Bandwidth, together with screen quality, is one of the most important elements in computing. Speed is described by the term "bandwidth". Large bandwidth thus implies higher speed connection.

The speed of the network communication is largely out of the designer's hands. Therefore the designer has to take the bandwidth of the typical user into consideration during the design and development process.

In the process of designing for home users with a slow telephone connection, data such as high-quality audio, large graphics or movies would result in very slow download. The download time for the same design for users with high-speed Web access (high bandwidth) would probably be fine.

In the case where the speed of the users" modems varies, the best solution is to design for the low-speed user or provide alternatives within the site for the different users. Some software packages provide for the problem with bandwidth.

Chapter 2 - Literature review



Web design will change direction in 2003 and this change will have a positive response on the problem with bandwidth. Web design needs to cater for the masses that are lowend users and do not have ISDN lines but who use modems with a much lower KBPS. (Alessi & Trollip, 2001:387; Nielsen, 1998; Vaughan, 1998: 407)

2.3.5 Authoring Tool

Authoring a program can either be done by the use of:

- programming languages, or
- authoring tools.

For the purpose of this study a choice will be made from a variety of authoring tools available, because it is easier to use and requires less programming skills.

The choice of an authoring tool is of primary importance, because the different features of each tool, manipulates the design and development of the product.

Therefore the advantages and disadvantages of the different authoring tools should be compared in order to choose the tool most suitable for the development of the specific product. (Shwier & Misanchuk, 1993: 131-142, Alessi & Trollip, 1991:344)

Table 2.6 outline important features that an authoring tool should support.

Chapter 2 - Literature review



Important features for an acceptable authoring tool. Table 2.6

Scheiderman (1998)	Vaughan (1998)	Schwier & Misanchuk (1993)	
User interaction.	Provide user interaction.		
Edit a link.	Manage individual multimedia elements.	Text composition and editing features.	
Import and export article/collections of articles, animation, video, sound and graphics.	Create and edit and import specific types of data e.g. text, images, sound and movies.	Create, edit, and/or import graphics, video, animation, sound.	
Print webs of links.	Design user interface.	Performance tracking e.g. reporting, answer-judging etc.	
Help function.		Author support feature.	
Search entire hypertext.	Visual flowcharting system or overview facility.		
Range of editing functions e.g. insert, delete copy, move and availability of graphics and video facilities.	Programming with traditional languages.	Accommodate analogue source output, digital source input and MIDI interface.	
Availability of lists of links.	Allows precise timing of events.		
Link verification to check the correctness.	Easy transfer across platforms.	Portability for competing environments.	
Range of display-formatting commands		Range of user control options available e.g. touch screen, speech recognition.	
Control of colour.			
Capability to switch easily from author to browser to test ideas.	Facility to build and test throughout.	WYSIWYG environment or facility to move from an authoring to a run time mode.	
	Facility for linking objects to pages/cards.		
Possibility of collaboration where more than one person can edit hypertext at a time.	One or more levels of interactivity, e.g. simple or, conditional branching.	Flexibility to support the styles of work of everybody using the system.	
Security control to restrict access to hypertext or parts thereof.		Documentation of work done, manuals and tutorials.	
Reliability - bug-free performance and availability of search and replace functions	Good debugging facility.	Programming features e.g. high level programming language, debugging tools.	
Possibility of integration with other software.	Integration with other software.	Integration of peripherals e.g. includes videodisc- and audio players etc.	
Import and export of standard interchange formats. (Vaughan, 1998: 6: 148-174:	Import objects from another application.		

(Vaughan, 1998: 6; 148-174; Schwier & Misanchuk, 1993: 136-141; Scheiderman, 1998:556-560)



2.3.6 CD-ROM

CD-ROM (Compact disc-Read Only Memory) is becoming a common method for distributing all kinds of information. They are considered multimedia, because they can contain digital data, digitalized music and digitilized video material. Hypermedia on CD-ROM contains the knowledge of entire text books encyclopaedias and works of literature and many forms of pictorial information, including video, animation and sound.

Reasons for using CD-ROM:

- It is less expensive than printed books and quick to compile.
- A full text search is possible as well as random access to information stored.
- Movies are available in which three-dimensional works of art may be rotated to inspect all detail.
- It is a compact size, therefore portable.
- It has long recording time. (660MB)
- It is compatible across all brands of players.
- It can be mass-produced.

(Alessi & Trollip, 2001:140; Schwier & Misanchuk, 1993:104-107; Vaughan, 1998:5)

2.4 Design interface issues

"Proper World Wide Web site design is largely a matter of balancing the structure and relationship of menu or "home" pages and individual content pages or other linked graphics and documents. The goal is to build a hierarchy of menus and pages that feels natural and well-structured to the user, and does not interfere with their [sic] use of the Web site or mislead them" (Lynch, 1995 cited by Shneiderman, 1998:561)

2.4.1 User centred design

The design of a web site is the primary important factor for the success of the site, as it should grab the attention of the user within a few seconds. The design is therefore aimed at capturing the attention of a potential user.



It is apparent that the graphic user interfaces are specifically designed to allow users direct control over their personal computers. They expect a level of design sophistication from all interfaces, especially web pages. The goal is to provide for the needs of all the potential users, adapting web technology to their expectations and never requiring the user to simply conform to an interface that is not user friendly by placing obstacles in their paths.

Major concerns are usually the following:

- Organising the hypertext.
- Structuring the knowledge and content.
- Limiting the length of the articles.

(Shneiderman, 1998; Nielsen, 1999a; Lynch & Horton, 1997)

Research has proven that many shorter articles are more effective that lengthier articles. Users tend to get bored and lose interest with the lengthier pieces of written material.

The user should be accommodated in all instances. Therefore the structure should be easy to understand. Place a menu on the introductory-or home page, with a detailed table of contents and links to the main concepts. (Shneiderman, 1998:559)

2.4.2 Navigation

A web site or multimedia program consists of information through which the user must navigate by means of pressing a key or clicking with the mouse. Navigation is the greatest issue of concern in hypermedia programs. Hypermedia disorientation or "getting lost in cyberspace" occurs as a result of inadequate navigation.

The logical flow of the interactive interface, as well as the table of contents is provided by a navigation map or site map. Most user interactions with web pages involve navigating hypertext links between documents. The main interface problem in web sites is the lack of a sense of where the user is within the local organisation of information.

It is imperative to have clear, consistent icons, graphic identity schemes and graphic or text-based overview and summary screens that can supply the user with the information desired without wasting time. An image or icon link should appear close to a text hyperlink, because most of the time the user will admire the wonderful, colourful link, but



eventually use the familiar text links. For the same reason mentioned, it is advised to add the URL to an image map, serving as a navigation tool. (Sachs & Stair, 1997:175)

The product can be structured in different manners, which indicate different ways of navigation to take place.

Table 2.7 displays the four different navigation structures as described by Vaughan, 1998:464.

Chapter 2 - Literature review



Table 2.7 Navigation structures used in multimedia projects

Method	Description	Structural layout
Linear	The user navigates from a starting point to the finishing point without any deviations.	
Hierarchical	The user navigates along a branched structure created by the natural logic of the content.	
Non linear	The user navigates through the program with no predetermined route.	
Composite	The user may navigate freely, but linear presentations may occur where data are logically organised in a hierarchy.	

(Vaughan, 1998:465)

Within every structure the user has some sense of free choice. The more navigational freedom the user has, the more important the navigation becomes. Navigation plays a central role in interactivity. In a number of the structures displayed in Table 2.7 the user has a number of choices. In these instances navigation of each page is of great importance, because it could lead the user away from the site, the user could get lost in the loads of data and eventually the user will not revisit the site ever again.

2.4.2.1 Elements of navigation relevant during design of the product

The following elements are of importance during the design phase:

- Start the design with a good understanding of the structure and communicate this to the user from the start.
 - The home page, which is the entry point of the web site, should display a strong sense of structure and place.
 - A well-structured and understandable site map should let the users know where they are and where they can go from there.
- Keep orientation information consistent on every page. This will assist users in knowing their whereabouts at all times.



- A link to the home page, site map and contact details (e.g. e-mail) should appear on each page.
- 3. Make provision for users to move **back** and **forward**. **Back** and **forward** features appear on most of the GUI browsers.
- 4. **Links** are icons, graphics, "hotspots", buttons and/or <u>underlined text</u> on the screen, which execute a command when clicked.
 - Active text links that have not been visited should be underlined and blue, while the visited links should appear purple or red.
 - Add text labels to graphic navigation buttons if they have to be used.

2.4.2.2 <u>Alternative methods of navigation</u>

Even though hyperlinks are the primary way of navigation, alternative navigation techniques or a combination of these will be applied in certain programs, depending on the hypermedia format, the content and the purpose of the program.

Table 2.8 displays a number of alternative navigation techniques, which may be successfully applied.

Chapter 2 - Literature review



Table 2.8 Alternative navigation techniques.

Navigation techniques	Comments
Metaphors	 Good metaphors are things familiar to people e.g. post box for e-mail, telephone for telephone number etc. Pictorial value of metaphor makes it memorable.
Indexes	 Alphabetical organisation of words helps in locating the word, without knowing the correct spelling. Indexing allows browsing.
Timelines	A timeline visually displays the time periods in the history and allows the user to make a choice.
Maps	 Geographical and conceptual maps are good navigation techniques, because of they are visual. Maps assist in the organising and presenting of information.
Searching	 Users can search for anything they can think of. The larger the database, the more important is the option for searching. Search options are powerful and quick.
Picture collections	 Pictures increase memorability. A collection of pictures may be useful in the areas of art, culture, science, etc.
Tables of content	A table of contents displays the larger structure of a database logically.
Menus	 Menus provide an overview of contents and organisation. A user can always go back to the menu to regain the sense of orientation.

(Summary: Alessi & Trollip, 2001; Sachs & Stair, 1997)

2.4.2.3 <u>Summary</u>

Every web page should contain at least one link, preferably to the home page or the site map or to the next page related to the information on the specific page. "Dead-end" pages with no links to any other local page in the site are totally unacceptable, as they frustrate the users and cause the rest of the web site to become inaccessible.

Users should never be uncertain where to go or where they are at a certain point in time. It is beneficial to provide good navigational assistance throughout the program.

This can only be accomplished in cases where the navigational structures and options are well designed and functionally developed.

(Alessi & Trollip, 2001:150-163; Coetzee, 2000:131; Nielsen, 1996a, Vaughan, 1998:189-191; 464-475; Sachs & Stair, 1997:174-175; Schwier & Misanchuk, 1993:173-180)



2.4.3 Design considerations

"The **design** part of your project is where your knowledge and skill with computers, your talent in graphic arts, video and music, and your ability to conceptualise logical pathways through information are all focused to create the real thing. **Design** is thinking, choosing, making and doing. It is shaping, smoothing, reworking, polishing, testing and editing" (Vaughan, 1998: 463)

Attractive screen design assists in transferring the visual communication of a message. Pictures or animation can, in many instances, be more functional in conveying a message than ordinary text. Therefore different factors need to be taken into consideration when attempting to create a successful web site.

(Phillips, 1997:78; Vaughan, 1998:462; Sachs & Stair, 1997; Schwier & Misanchuk, 1993:209)

Table 2.9 displays advice from different authors regarding the design of a web site.

Table 2.9 Advice for the design of a web site

Author	Advice
Shneiderman	 Know the users and their tasks Designers are not good judges for their own work. Consult the user throughout the design process. Require low cognitive load Do not burden the user's short-term memory. Meaningful structure must come first The presentation and structure of the information is the most important. Make use of chunking Organise information into chunks that deal with one topic. Design each screen with great care Screens should be clear and easy to grasp. Use diverse skills Teams of experts in different fields should be used. Show inter-relationships Articles must contain links to related work. Ensure simplicity throughout The link structure must allow for consistent and easy navigation

Table 2.9 (continued)

Author	Advice		
Nielsen	 Structure the content. Provide an overview on topics discussed. This should save the user time in finding relevant information. Limit constantly moving animation Moving elements on a page should not be constant attacks on the human senses, because they have a negative effect on peripheral vision. Blinking elements should not be used at all. Avoid orphan pages. Users may access a web site from different pages; therefore each page should have a link to the home page and identification unique to the web site. Avoid long scrolling pages. Research has indicated that a smaller percentage of the users scroll beyond information that is visible on the screen. Therefore the most significant data, as well as the navigation options, should appear at the top part of the page. Scrolling must be used with care and for specific purposes. Provide a search option. A search option for a large and growing site is advisable, because it assists the users in finding information quickly. Always keep the download time in mind. Sites need to be designed for speed. The limit for response time regarding the download is 15 seconds, otherwise the users lose interest. Utilise the standard "Back" button. The users know that they can try anything and then use the "Back" button to return to familiar screens. When designing the site this button should stay in tact and not be disabled. Do not pollute the screen with new browser windows. New browser windows are opened on the users" screens. The user apparently stays on the site, but in actual fact all the browser screens take over the user's machine and also disables the "Back" button. Place the logo and the name on each page. Wake use of chunking. Split the information by using subheadings and grouping. 		
Alessi & Trollip	 Realise the needs of the target group. Set up design documents for good communication and involve the client Use the experts in the different fields during design. A team of experts in different fields should be used to ensure the functionality, workability and aesthetics of the product. Use brainstorming. Brainstorming sessions to develop specific ideas about the content and other techniques. Establish possible constraints. This includes computer input capabilities, software and network capabilities, bandwidth, financial and timeline constraints. Provide user-friendly search facilities in large sites. The user should have the opportunity to search for a word or phrase. Take advantage of the communication facilities on the Web. Select appropriate facilities such as e-mail, listservs, bulletin boards, chat rooms and teleconferencing. 		

(Alessi & Trollip, 2001; Shneiderman, 1998; Nielsen, 1996b; Nielsen, 1997; Nielsen, 1999a)



2.4.4 Multimedia building blocks

In order to produce a multimedia product, it is necessary to make use of individual building blocks. The most appropriate building blocks for the proposed product are discussed.

2.4.4.1 <u>Text</u>

Text is the most common way to present information and communicate ideas to the user. Words and symbols deliver the most widely understood meaning to the largest number of people. Therefore the choice of appropriate words are of the utmost importance.

Presentation of information should generally be short, especially in the case of complex data being presented. There are exceptions to the rule, e.g. in the case of a lengthy document covering a specific topic or issue. The information will be relevant to the user and scrolling down the page will not be a problem.

Balance is important in all areas of the design phase. When using too little text on the screen the user has to turn too many pages, which could result in frustration. Too much text on the other hand causes the screen to look overcrowded and unappealing. The appropriate length depends on the subject matter and the requirements of the target group.

The following issues regarding text should be taken into consideration during the design phase:

- Scrolling should be avoided or used in moderation in specific circumstances.
- Web pages should not be longer than one and a half to two times the size of the screen. A page of 400 pixels high will ensure no scrolling.
- Paragraphs and sentences should be well-formatted and consistent indentation or blank lines should be used to announce a new paragraph.
- Spacing between the lines improves the readability of the text.
- Text lines should be between 40-60 characters. (8 -10 words)
- Blinking and flashing text should be used with caution, only in very specific circumstances.

(Alessi & Trollip, 1992:34-35; Nielsen, 1996; Schwier & Misanchuk, 1993:231-251; Vaughan, 1998:190)

Chapter 2 - Literature review 42



2.4.4.2 Text attributes

The end user may not view a web site in the font that was used during the design phase, because user preferences in the browser may change the look of the text in the document. Therefore it is important to design according to certain basic principles and to have knowledge of the attributes of the building blocks used during the design phase.

The text attributes are mentioned and briefly discussed in Table 2.10.

Table 2.10 Discussion of the different text attributes

Building blocks	Discussion	
Fonts and faces	 Typeface is a collection of characters, which include many type sizes and styles. Font is a collection of a specific single size and style belonging to a typeface group. Font styles are such as: bold for emphasis and cueing, italics for titles, specialised applications, technical terms, phrases and specific purposes. Underlining, outlining and shadow, lettering should be avoided. No more than 2 different fonts should be used on a single screen. 	
Print size	 Font sizes from 9 to12 points are suitable for body text. Larger font sizes are more appropriate when used for titles, headings and for display. Print size on screen should be appealing and easy and comfortable to read. 	
Colour	 Design for monochrome; colour displays may not be universally available. Active hyperlinks should be blue; while visited links should be purple or red. Guidelines for colour coding: Use colour for emphasis and for indicating differences. Font should contrast with the background e.g. black on white and vice versa. Use colours that are associated with social conventions. Be consistent in the application of colour. Consider the need of colour-deficient users. 	
Justification	 Right-justified text creates too much white space and affects readers negatively. No definite evidence exists to indicate that left justification is any more or less readable than justified text. 	
Case	 Use a combination of upper and lower case for easy reading (Sentence case) 	
Buttons	 Default Internet buttons may also be used. The function of a button must be clear. Supply a text label or clear picture to indicate the purpose. Buttons with clear meanings, confirmation or additional clarifying information in a text box, provide a user-friendly interface. 	

Table 2.10 (continued)

Building blocks	Discussion
Symbols and Icons	 Symbols usually convey important messages. Use those that are easily recalled and remembered. It is advisable to combine symbols with text cues. Text is more effective than imaginary pictures, but both can be applied effectively. Icons must be unambiguous, relatively small and preferably simple line drawings.
Animating text	 Animation can recapture and retain/hold attention if applied correctly. It should not be overdone and without purpose. A bulleted list of words flying in, dissolving others etc. can be effective.
Layout of text	 Text should be in the centre of the screen covering not more than 14 centimetres. Leave enough white space to ensure clear display of text. Use blank lines to indicate new paragraphs. Limit down scrolling to an average of 2 screens. Try to avoid horizontal scrolling. Information should be provided in manageable chunks to prevent information overload.

(Vaughan, 1998:181; Misanchuk, 1992; Schwier & Misanchuk, 1993:244; Reeves, 1994; Schneideman, 1998:399-402)

2.4.4.3 Screen design

The purpose of multimedia is primarily to create good communication and most effective communication comes with very selective use of the different multimedia "tools" and effects. Complexity usually interferes with communication. The most powerful concepts in screen design are accomplished by applying the following basic principles:

- simplicity,
- consistency,
- clarity,
- aesthetic consideration,
- white space,
- colour combinations; and
- graphics and images.

Table 2.11 displays the elements important to screen design and contains a brief discussion of each.



Table 2.11 Elements of screen design

Screen design attributes	Discussion		
Simplicity	 Keep it straightforward. Be minimalistic in the approach and provide only the key message. 		
Consistency	Good screen design is reflected by consistency in: screen layout throughout the site, use of colour, use of fonts and styles, screen density and white space, interactive behaviour, style of graphics, style of presentation; and terminology such as directions, menus and help screens.		
Clarity	Use terminology familiar to the target group and related to the industry. Use bulleted lists where applicable. Keep sentences short. Use active voice. Stay away from negative statements if possible. Use informal language. Use inclusive language.		
Aesthetic consideration: -Balance -Harmony -Unity -Rhythm	 Balance creates a feeling of stability. It can be formal or informal, symmetric or asymmetric. Harmony is achieved by consistency and repetition, e.g. the same fonts, colours and graphic style. Unity - every element on the screen should fit in and it should look as though the elements belong together. Rhythm is achieved by applying features such as headers, footers, page numbers and figure captions consistently. 		
White space	 White space refers to space without text or graphics, which has been purposely left blank to create a specific effect. The purpose of white space is to: bring ideas together, illustrate relationships through the use of space; and create the illusion of lightness in the screen display. 		
Colour	 Colours can be difficult to manage in cross-platform projects. Colours are matched to their nearest equivalents. Colour monitors vary in the representation of the colours used and it is not always easy to predict what the end-user will see. Colour attracts attention, but wrong use of colour can be the cause of ineffectiveness and poor design. Colour can: soothe or strike the eye, draw attention to warnings, emphasise the logical flow of the material, add accents to dull displays, evoke emotional reactions such as joy, fear or anger, and facilitate subtle discriminations in complex displays. 		



Table 2.11 (continued)

Screen design attributes	Discussion	
Graphics and images	 GIF AND JPEG are the best-suited images to use. Complex colour patterns are best saved in JPEG, because this format can save images with high density of colours, but it cannot be animated. It also has a high degree of compression, which results in quicker downloading. GIF format is restricted to 256 colours. The images used should not exceed 50K, to ensure fair download time. To accommodate text-only browsers, alternative text must be provided for every image. Still images are generated by the computer as bitmaps (paint graphics) and as vector-drawn graphics (lines, rectangles, ovals) Objects can be scanned in and edited by means of image-editing tools. Graphics and images can be imported from another source. Pictures should appear together with the related text to allow the user to inspect the illustration and the explanation together. Graphic information must be integrated with the message being conveyed. With graphics and images the designer must follow the rule of consistency throughout the site. 	

(Alessi & Trollip, 2001:68; Misanchuk, 1992:167-178;

Schwier & Misanchuk, 1993:209-246; Vaughan, 1998:181-317)

2.5 Marketing issues

As a result of the exploration of multimedia on the web, it has become the most popular Internet tool for marketing as well as advertising. The Internet via the web handles the markets, both horizontally as well as vertically, all depending on the product, the objective and the end goal. (Ellsworth & Ellsworth, 1995:269)

2.5.1 Marketing plan

To ensure success in the marketing of a web site, the development of a proper market plan is advisable. During the design of a market plan it is necessary to know the competitive advantages of the product. This is not a fixed procedure, but a strategy by parties involved in the web site. A brainstorming session or sessions can produce a workable plan. (Wilson, 1999d; Tips for writing..., 2000)



Table 2.12 displays a summary from three different sources regarding the different factors to consider when designing a web site as a tool for marketing purposes. The summarised information in Table 2.12 is thereafter discussed in the following manner:

Table 2.13: Discussion of factors as described in the article "Tips to writing a cyber marketing plan".

Table 2.14: Discussion of factors as described by Wilson.

Table 2.15: Discussion of factors as described by Ellsworth & Ellsworth.

Table 2.7 Factors to consider when designing a web site as a marketing tool

Tips for writing	Ellsworth & Ellsworth	Wilson
 Provide good service and support. Know the target group. Design for a specific objective. Establish brand awareness. Establish a feeling of loyalty. Provide in-depth information. Create a basis of trust and comfort. Maintain good public relations. Benefit from the research potential. Decide on content. Set milestones. Work according to a timeline. Use resources. 	 Supply links to sites of interest. Research the interests of users. Do competitive, technological and cultural scanning. Use discussion lists. Attract visitors. One-on one promotion. E-mail facility to ask questions. Provide useful services and information. Distribute news releases, sponsor events etc. Integrate with other online activities. Enhance visibility. 	 Access the interests, abilities and strength. Monitor preferences. Identify and keep the competitive advantage. Attract visitors. Outsource activities. Content is primary. Become destination site. Establish a brand name. Create an atmosphere of trust. Create credibility by a professionally designed site. Obtain an advertising strategy. Present valuable information. Get permission to send e-mail to visitors. Work according to a timeline. Set target dates.

(Ellsworth & Ellsworth, 1995:6; 58-66; 269-288; Tips for writing..,1997; Wilson,1996-1999)



Table 2.13 displays a discussion of the important factors to consider when designing a web site as a marketing tool as described in the article, "Tips for writing a cyber marketing plan" and summarised in Table 2.12.

Table 2.13 Discussion of factors as described in "Tips for writing.."

Important factors	Discussion		
Know the target group.	The capabilities, likes and dislikes of the target group must be established to ensure the attraction of visitors		
Design for a specific objective.	Decide what the main aim of the site has to be and design to reach the specific objectives.		
Establish brand awareness.	Use promotions, sponsorships and hyperlinks to established sites to gain visibility and exhibit the product Direct response promotions may gain competitive advantage.		
Establish a feeling of loyalty.	Establish a community of customers that are loyal to the product and company. Satisfied customers advertise be word of mouth.		
Provide in-depth information.	Supply an in-depth understanding of the product or service and knowledge about the company and industrial		
Create a basis of trust and comfort.	Create an atmosphere of trust and comfort to ensure that the customer will want to liase with the company and not take the business elsewhere.		
Maintain good public relations.	Work with the journalists who work in cyberspace to get coverage of the business.		
Benefit from the research potential.	Feedback from users and competitors may be useful in adjusting the marketing tactics.		
Decide on content.	Become familiar with the elements of cyberspace. Technical designs and limitations will determine how the content should be structured.		
Milestones and timelines.	Set specific target dates.		
Resources.	Determine what resources are needed and what outsourcing has to be done.		

(Tips for writing...,2000)



Table 2.14 displays a discussion of the important factors to consider when designing a web site as a marketing tool as described by Wilson and summarised in Table 2.12.

Table 2.14 Discussion of factors as described by Wilson.

Important factors	Discussion		
Access the interests, abilities and strength.	Look for specific areas of competence and excellence.		
Monitor preferences.	Combine excellence and enthusiasm to create a winn combination.		
Identify and keep the competitive advantage.	Strive to be better than the competition and determine how to keep the advantage.		
Identify possible ways of attracting visitors.	Use banner ads. Ensure good search engine positioning. Establish reciprocal links to the relevant industry organisations. Give free information and advertise the product and services.		
Decide on the outsourcing of activities.	Provide for this in the marketing budget.		
Content is primary.	With excellent content it will be easy to obtain reciprocal links.		
Plan on becoming a destination site.	Establish more links to major sites.		
Establish a brand name.	The brand is the image of the business in the minds of the users. Numerous factors e.g. quality of design, colour scheme, download time, clarity of wording etc. contribute to the image of the site.		
Create an atmosphere of trust.	Credibility can be created by giving the full address an phone number, a photograph of the physical building and if applicable photos of the people involved.		
Create credibility by producing a professionally designed site.	First impressions are lasting.		
Decide on an advertising strategy.	Strategy differs for every type of site. The appropriate way of advertising for the specific site must be well defined.		
Present valuable information.	Provide valuable information to the users on a regular basis via e-mail.		
Get permission to send e- mail to visitors.	Include a form that will collect their e-mail address. Adhere to a clear privacy policy regarding the information.		
Work according to a timeline.	Keep the market strategy on track.		
Set target dates.	Milestones and specific dates ensure timeous delivery.		

(Wilson, 1996b, Wilson, 1996d, Wilson, 1997a, Wilson, 1998a, Wilson, 1999d)



Table 2.15 displays a discussion of the important factors to consider when designing a web site as a marketing tool as described by Ellsworth & Ellsworth and summarised in Table 2.12

Table 2.15 Discussion of factors as described by Ellsworth & Ellsworth.

Important factors	Discussion		
Provide useful services and information.	Good information and support demonstrate quality, expertise and credibility of the company.		
Distribute news releases, sponsor events etc.	Public relations activities such as distributing events, pages and publications should add to exposure of the business.		
One-on one promotion.	Marketing on the Web reaches out to the global community of users on a one-on-one basis.		
Do competitive, technological and cultural scanning.	Technological and competitive scanning ensure the advantage above the competitor and cultural scanning provides information of the target group.		
Supply links to sites of interest.	Offer links to existing databases, collections of Internet and Web guides, searching tools or a repository of images and files and also topic related issues.		
E-mail facility for asking questions.	Offer a feature such as "ask the expert" with an e-ma address for the questions and obtain a return address.		
Integrate with other online activities	Supporting Web activities with other Internet activities results in successful marketing and promotion.		
Enhance visibility.	Make the site visible by means of discussion lists, newsgroups and e-mail.		

(Ellsworth & Ellsworth, 1995:58-66; 269-288)

2.5.2 Target population

As discussed in 2.5.1 the success of successful marketing lies in the designing of a proper marketing plan. Therefore it is fundamental to know the target population. (Phillips, 1997:50; Wilson, 2000a)

Even a small business can have several different kinds of customers. It is important to be aware of these differences and adjust the market strategy accordingly. (Wilson, 2000a)

Table 2.16 displays different issues that have to be attended to when assessing the general target population.

Table 2.16 Issues to address when assessing the target population

Phillips	Wilson	Alessi & Trollip	Shneiderman
-Are they all in one place? -How are they going to use the product? -What is the size of the audience? -What is the level of computer literacy? -Which type of hardware is used? -English literacy?	-Age groups? -Gender? -Job responsibilities? -Field of interest? -Language literacy?	-Age? -Reading proficiency? -Motivation? -Computer literacy? -Access to the Web? -Familiarity with the Web? -Time availability? -Language literacy?	-Who are they? -What are the tasks? -Gender? -Age? -Economic status? -Educational background? -Language literacy? -Physical disabilities?

(Wilson, 1996a; Phillips, 1997: 127-144; Alessi & Trollip, 2001:440; Scheiderman, 1998:565)

A sound understanding of the nature of the target population is fundamental, for the successful use of a web site is measured against the visits and returns of the users. Therefore a proper study of the nature and the needs of the general target population is imperative. The knowledge, background, expectations and needs of the potential users will vary from tentative novices to expert users and the aim of a successful site should be to accommodate a range of user skills and interests.

(Lynch & Horton, 1997)

Every project has a specific nature. Therefore specific questions are chosen to obtain the appropriate information needed. Table 2.16 displays a range of questions to choose from in compiling target population questionnaires.

After doing thorough market research on the group it will become clear where and how to advertise and how to segment the browsing sections.

Because marketing on the Web differs substantially from marketing by means of any other media, using the technique of segmenting as an organisational tool has its merits. In spite of its customer numbers, the strategy involves one-on-one promotion.

(Ellsworth & Ellsworth, 1995:269-270; Marketing on the Internet, 2000, Wilson, 2000a)

2.5.3 Promoting the site

Numerous factors have to be taken into account, when promoting a web site. To achieve success the site has to be carefully targeted and wisely designed. The point of departure is to have a clear purpose and targeted objectives.

Chapter 2 - Literature review 51



2.5.3.1 <u>Selection of a domain name</u>

Preferably choose a name that is short, memorable, meaningful and related to the core of the business or business name. A domain name plays an important role in the visibility and exposure of the "company". Therefore it should be carefully selected to prevent confusion with other similar names.

(Sachs & Stair, 1997:138; Wilson, 1999d)

2.5.3.2 Advertisement

The accepted definition would state:" advertise: to announce publicly, especially by printed notice or a broadcast."

A web site is hidden; a web address or link from a search engine or another web page is necessary to get to the site. A great deal of promotion regarding a web site can be done for free, but it will also become necessary to do some outsourcing to upgrade the standard of the web promotion at some stage.

Following are different ways in which a web site can be advertised:

Web search engines

It is not a difficult procedure to get a site listed on an engine, as a "submit a site" link appears on each search engine page. Search engines read a Web page and index all of the words from the page. Ensure to submit each page individually in order to have all the keywords from each page incorporated.

Once the site is registered on a search engine or every single engine available, the site is advertised. Users of the search engines can find the site by searching for keywords. (Brian, 2001c, Krause, 2000, Patterson, 1997:52; Wilson, 1998d)

Branding by banner advertising

Branding deals with advertising industry buzz words such as "impressions" and "page views". Branding is one of the great goals for buying advertising on the web. This kind of advertising is expensive. A banner advertisement is sold on the basis of CPM (cost per thousand "impressions" or " page views".)



The advantages of a banner advertisement are that reinforcing takes place when surfers review it again and again. The ideal is obviously that the user clicks on the banner and goes to the site.

Display banner ads at the beginning of the site. It is important to give a professional impression and to develop recognition in the cyber world.

Many companies plan an advertising strategy of driving people to their web sites through carefully placed banner ads on appropriate high traffic sites.

(Brian, 2001c, Patterson, 1997:57; Wilson, 1998d)

Click-through-rate and conversion rate

A goal for using advertising as a tool is to get visitors to the site to purchase the goods or services available. (Direct marketing). This is done by the CTR (click-through-rate), which indicates the percentage of people who sees the banner ad, clicks on it, and goes to the site.

Conversion rate is the percentage of visitors who go to the site, convert from shoppers to buyers and actually purchase an item or make use of the services available.

2.5.3.3 <u>Niche league techniques</u>

Most people revert to a niche league, because branding is too expensive. This is the most popular way of advertising and is seen as a proper promotional tool. The following strategies are relevant:

Public relations

There are several inexpensive ways to send out news releases that will be picked up by both printed and online media. A positive mention of a new site in an article or news story would not cost anything, while such a mention could result in thousands of visitors overnight.

A new product, service, event or even a contest or a promotion may catch the attention of a potential visitor.

An alternative way of getting coverage from the press is to hire a public relations firm with enough contacts in the media and press world. They will assist in creating



newsworthy events as well as in the distribution thereof to the right people in the media industry. Outsourcing public relations will probably direct more traffic to the site at a relatively low cost per visitor. Professional people deliver a professional service and the site and business receive the benefits. (Creating a Web Presence, 2000; Patterson, 1997:47; Wilson, 1996d)

Advertising in newsletters and newsgroups

A great deal of advertising arrives from advertisements in targeted e-mail newsletters. While reading through interesting material the reader casually glances at, or reads through the advertisement. URLs serve as clickable hyperlinks to enable readers to go directly to the site by clicking on the URL in the newsletter.

Publicise the new web site in appropriate newsgroups that are relevant to the business or product, after some homework on the accepted etiquette of the specific group or groups has been done. This is an excellent way of getting an idea of what others in the same industry are doing and it also provides the opportunity of keeping abreast of the trends in market and industry. (Creating a Web Presence, 2000; Patterson, 1997:47; Wilson, 1996d)

Keyword purchase

Purchase keywords on the major search engines and directories. When a user enters a search phrase, which includes the specific phrase, a colourful animated banner pops up above all the search responses and immediately catches the eye. This kind of advertising is sold on a CPM basis and the cost is relatively high, because of its specific target hit.

Search engine positioning

Finally, it might pay off to hire a company to do a search engine positioning. This include the use of Meta tags and HTML, which are discussed in 2.3 (Technological issues)

2.5.3.4 Checklist for web site promotion

Promotion plays an extremely large role in the overall success of new and existing web sites. Table 2.17 displays important techniques regarding Web marketing as discussed by Ellsworth & Ellsworth (1995) and Wilson (1999e).

Table 2.17 Important techniques in Web marketing

Wilson	Ellsworth & Ellsworth
 Request links on industry sites. Include the URL on company stationary, cards and literature. Promote by using traditional media. Request reciprocal links from complementary web sites. Issue news releases of newsworthy events to web periodicals and send news releases to print. Publish an e-mail newsletter weekly, monthly or quarterly to keep in touch with the visitors. Join a mail facility such as Yahoo, which is big and free. Join a banner exchange program, which means that you agree to show a rotating banner on the site for one of the other link exchange members and they will do the same in return. Request visitors to bookmark the site in order to revisit the site regularly. Install a "signature" in the e-mail program 	 Provide an item such as a "what's new" page that changes frequently. Offer links to interesting related databases and site, Web guides, repository of images and other fields of interest. Provide a facility where the user can interact, an " ask the expert" option. Answers via e-mail are essential. Link with other companies offering link opportunities. Register with different search engines to increase the location of the site. Support Web activities such as discussion lists, news groups, e-mail to

(Ellsworth & Ellsworth, 1995:282-290; Wilson, 1999d)

2.5.4 Links

Links from one web site are becoming increasingly important, because the search engines are flooded with millions of web pages, which increase daily. More and more people find web sites through printed references or by means of links from other sites

When the site links to other sites, which entertain, educate and serve the visitor, value is added to the visitor involved. It is sound practice to link to sites, which add value to the site.

Establishing a link page for the industry and keeping it up to date and as complete as possible, is a certain way of attracting visitors. These links add value to the site, results in visitors coming to the site from a link in another site and are of value to the visitors. (Ellsworth & Ellsworth, 1995:277; Wilson, 1997b; Wilson, 1998a)



Multiple doors of entry

To multiply web pages is an excellent and working strategy to increase the number of ways people enter into a web site. By increasing the number of web pages in a site the chance of being found is bound to increase. Each carefully planned web page becomes another door of entry to the web site. Ensure that there are active links to the other pages of the site.

The web site gets exposure by linking it to and from different sites in the industry as well as by creating a new web site supplying information and links regarding the industry and related fields. In other words one site could be designed into different sections and be advertised totally separately.

It is good marketing practice to provide tools and resources in the web site relating to the field of interest or the industry. Another strategy is to offer links to different data bases collections of Internet and web guides, searching tools or a repository of files and images relating to the business. Users, who find a rather complete collection of links to high quality links, are bound to add the web site to the favourites and return time and again. (Ellsworth & Ellsworth, 1995:271;Krause, 2000; Wilson, 1996c)

2.5.5 Attracting visitors and increasing traffic to the web site

It is important to induce visitors to revisit a web site and there are multiple ways to accomplish a potential revisit. Following are a number of examples:

- Remind visitors via e-mail after they have subscribed to the free e-mail newsletter.
- Request and remind visitors to bookmark and add the site to their "favourites" list.
- Focus on the curiosity of the user. A large, but interesting and well-navigated site will cause a user to return for more information and to satisfy curiosity.
- Provide a "nice to have" or "what's on" feature providing interesting, fresh and useful information.
- Supply impressive content of tremendous value and aim to have the site mentioned in the media.
- The content of a web site should consist of the some of the following features:
 - 1. Information, consisting of articles, reviews or links to other sites in the field.
 - 2. Free software downloads, if applicable.
 - 3. Entertainment such as games, music, photographs, videos etc.



- 4. Online services such as calculators, submitters and site monitors.
- 5. It should provide a niche and build the offerings of the site with such excellence that people are attracted to the product that has been created.
- 6. It should offer something free, host a contest with worthwhile prizes and make sure the visitors know that the answers to the questions can be found in the web site.
- The information should be presented in digestible chunks and easy to follow instructions regarding the navigation should be provided, if necessary.
 (Wilson, 1999e; Ellsworth & Ellsworth, 1995:270; 271)

2.5.6 Search engines, directories and portals

2.5.6.1 <u>Search engines</u>

Internet search engines are sites specially designed to assist users in finding information stored on other sites on the WWW. Search engines work in different ways, but they perform three basic tasks:

- They use important words and search the Web or selections thereof.
- They list the words in an index as well as the location thereof.
- They allow users to look for words or combination of words found in the index.

Search engines employ software tools called "spiders" to build lists of the words found on the Web. The process is called "web crawling".

The owner of a site uses Meta tags to specify key words and concepts under which the page will be indexed.

According to Wilson (1997a; 1998a) it is important to develop an engaging title page for each page in the web site. The more key words and the longer the title, the better.

Following are important steps for the preparation of web pages for optimal indexing on the search engines:

 Write a descriptive title page of five to eight words for each page. Use descriptive key words along with the business name on the home page. Brainstorm and list more or less 20 well thought through keywords that visitors would probably search for



when trying to find the business. Place them in a Meta tag at the top of the page between the <header><header/header>tags.

Place the words at the top of the page in the following way:

<header> <title> programme in design</title></header>

- Write a page description of 200 to 250 characters, by selecting the most important keywords and place this at the top of the page in the same format as described above.
- Submit the page/s to the important web search engines and directories.

Gateway pages

With search engines indexing 50 to 100 million web pages, it is necessary to write the content to suit the search engine for a high ranking on a search. Web pages that are written to suit the search engine are called "gateways" or "doorways" or "bridge pages". They provide a gateway to the rest of the site for people coming from a particular search engine. Because the different search engines have different specifications a gateway page for each major search engine is compulsory.

The following characteristics are found with regards to a gateway page:

- 1. The page appears high in the searches.
- 2. Nearly all the links go to another domain name.
- 3. A particular word or phrase seems to be repeated in the title using different capitalisation.
- 4. A word or phrase pops up again and again in the text of the page.
- 5. A page with few words says something like "to learn more about ... click here."

The following questions need to be answered when making the gateway page:

- 1. How do you want to introduce a visitor to the site?
- 2. What message or feeling do you want to convey?
- 3. What keyword or key phrase do you want to emphasise?

After the questions have been dealt with, the pages have to be prepared in HTML as defined above and then submitted to the nominated search engines.

Chapter 2 - Literature review

58



(Franklin, 2001; Krause, 2000a; Marketing on the Internet, 2000; Webopedia, 2001; Wilson, 1997a; Wilson, 1998a; Wilson, 1999a)

2.5.6.2 Directories

Internet directories have developed into popular search tools. A directory is a kind of file that is used to organise sites / files into a hierarchical structure. Human editors use manual submissions to create a directory, therefore redundancies caused by automatic software submissions are eliminated. Directory listings are valuable, because they power many indices and portals and they attract major traffic.

The editors of the directories decide on the title and description of the site submitted. A sound strategy is to include a concise, accurate and clear meta-description on each page. Then submit to the most appropriate category.

Open Directory Project (ODP) is a directory, which powers numerous other databases such as Netscape, AOL, Google and Lycos. It needs mentioning, because numerous search engines, directories and portals use this database as part of their operation. This is in actual fact a volunteer index of site listings.

The directory is a combination of a reference library and yellow pages and volunteers are in charge of the different categories. They edit the sites submitted to the specific category. (Bruemmer, 2000; Directory, 2001)

2.5.6.3 <u>Portals</u>

A portal is a web site that offers numerous resources and services such as on-line shopping malls, search engines, e-mail and forums. Initially portals were online services that provided access to the Web, but most of the search engines have transformed themselves into portals, because portals attract a larger visitor group and keep the attention of the visitors to a much larger extent. (Lynch, 1998)

Chapter 2 - Literature review



Following are three definitions of a portal:

- "A 'gateway' or site that offers hundreds of links to new and exciting sites on the
 Internet. Portals developed as a service to people requiring assistance in getting to
 their destination sites. Portals are meant to be transition pages that help web
 surfers find what they are looking for. Portals typically function as in-and-out sites,
 not destinations. "(Dove, 2000)
- "A portal is any site that attempts to organise and streamline the on-line universe for anyone who chooses to (virtually) enter through that particular door." (Crawford, 2000)
- "The portal principles described as a web site with a wealth of content, providing a
 variety of services, which includes search engines, directories, on-line shopping,
 news, chat-rooms and e-mail. The purpose of a portal proves to be one integrated
 system to simplify the collection and updating of information and present it to the
 user in an integrated front-end interface." (Meltzer, 1999)

Sutherland, cited by Dove, (2000) states that portals must offer other features and essential services to ensure that visitors return to the site, otherwise they can go directly to the other site once they know the way on the web. Services such as e-mail personalisation and favourites are essential for revisiting purposes.

The following criteria determine the visitor's choices:

- Ease of use.
- Services offered.
- Performance.

Even though a site should have a pleasing "look and feel" (aesthetically pleasing) the most important factor remains the relevance of the content and the ease with which the information and the links can be accessed.

Focused portals are valuable for specific surfers who are looking for information in a specific field or industry. These focused portals provide more depth and value to an interested visitor. The important fact here seems to be the development of content portals that serve specific niches. The bigger and the broader the portals become, the less depth they have and the more difficult the searches become.

A typical **content** portal would be one that provides communication services (free e-mail and chat facilities), delivers news and relevant information on different countries and territories, serves users who want to use the web rather than just read content. (Dove, 2000)

The site developer needs to decide whether the site should be a portal with some news and services or a destination with a few links. The site cannot be both. Real content portals deliver services required by the visitor, as well as knowledge in context where the content is valid and functional.

AltaVista.com is an excellent example of a truly functional content portal, which brought together content from some of the world's biggest and most respected news and information sources. The result of a portal such as the above is a significant step forward for personal empowerment through information.

Users of such a portal can customise the content according to their interests and preferences, they can enjoy live news, real-time stock quotes, exciting entertainment, live sports scores and a host of other live content that refreshes instantaneously and is available 24 hours a day.

(Dove, 2000; Melzer, 1999)

Search engines can transform into directories or portals if the need arises. A search engine can fall in the category of a directory, but still work as a search engine. Table 2.18 displays a number of search engines as they appear as directories, portals or search engines. The preference could change at any time.

Table 2.18 Significant search engines, directories and portals

Search engines	Directories	Portals
Google	Open Directory Project	Lycos
Northern Light	LookSmart	AltaVista
Infoseek	Yahoo	AOL
Excite		



2.5.7 E-mail

Effective e-mail can be one of the most important tools in marketing a business on the Web. By means of this tool the potential visitor can be reached and information can be retrieved from him.

2.5.7.1 Aliases

An alias is an extra e-mail address for a person, for instance an alias, which contains all the e-mail addresses of the subscribers. It is important to put the addresses in the bcc: field (blind carbon copy) to ensure that all the e-mail addresses are not visible to the subscribers.

It is possible to have multiple aliases, each for a different purpose. A business might use info@domainname.com, as well as education@, design@, students@, and dozens of others. Each alias can be forwarded to a different local e-mail address or all to the same address. In this way a single e-mail can be distributed to different individuals at one company.

(Brian, 2001c; Wilson, 1996a; Wilson, 1997a)

2.5.7.2 Filters

Filters help organise the e-mail from a web site when the load of mail becomes too much to handle individually. The filter can look for a key word on the subject line, or for one of the aliases, and put all mail with the specific name into a separate folder.

2.5.7.3 <u>Databases</u>

E-mail to database programs are becoming more and more popular. When collecting information from a survey, or names and addresses of visitors, a program can be set up which automatically enters this information into a database on the web site. The data can occasionally be downloaded for merging into a desktop database. Once in a database one can study the responses from many different angles, and learn a lot about the web visitors.



2.5.7.4 Autoresponders

There are several ways of distributing information automatically, which can save a tremendous amount of time.

An autoresponder or autobot is a kind of program, which automatically sends a specified text via e-mail whenever it receives an e-mail message. The more sophisticated programs will send different messages depending upon the word placed in the subject field. The Internet Service Provider is able to set up this kind of service.

A second method involves using a "forms-to-email" cgi program such as cgiemail. The information to be distributed has to be placed into a text file on the web server. Whenever a visitor places his e-mail address into a form on the web page and presses the "submit" button, the text is automatically sent to the visitor.

2.5.7.5 Forms-to-email

By using forms, various kinds of contact information such as name, address, telephone number and answers to multiple-choice questions with regard to the seriousness of the prospect can be obtained.

With mere e-mail response links on a page, people tend to forget some of the vital information. The response form is powered by a cgi program, which resides on the computer of the Internet Service Provider. The program takes information from the form and instantly sends it to the receiver in a nicely formatted e-mail message.

By means of specific programs and the use of filters the "stationery" feature, responses can automatically be sent out from a desktop computer whenever a certain word or phrase appears in an e-mail message.

2.5.7.6 <u>Subscriptions</u>

A powerful way to extend a web site marketing strategy is to allow people visiting the web site to subscribe to an e-mail newsletter. Provide a form box on different pages in the site where visitors can place their e-mail address and additional information if necessary.



By means of a specific program, such as cgiemail forms-to -email in conjunction with a mailing list manager program, such as Majordomo, these subscriptions can also automatically be done. Cgiemail as well as Majordomo are freeware programs that work well for the specific purposes and are therefore mentioned and generally used.

It is necessary to provide clear instructions on how visitors can unsubscribe themselves in each newsletter. This is good netiquette and will minimise the "unsubscriptions" that have to be processed by hand.

E-mail is one of the most significant elements of marketing and should be incorporated in the market strategy of every business.

(Alessi & Trollip, 2001:375; Brian, 2001c; Ellsworth & Ellsworth, 1995:267; Hippleheuser, 1999; Marketing on the Internet, 2000; Wilson, 1996d; Wilson, 1998b)

2.6 Communication issues

"The web is an increasingly powerful global interactive and dynamic medium for sharing information " (Kahn, 1997:5)

The web should be used in any of the following ways:

- As a medium of collaboration, discussions, exchange and communication of ideas.
- As an international platform for the expression and contribution of artistic and cognitive understanding and meanings.
- As a resource for the identification, evaluation and integration of a variety of information.
- As a medium for the participation in simulated experiences, apprenticeships and cognitive partnerships. (Kahn, 1997:43)

The Web has become a primary means of communication among people, because any form of file and/or information can be moved from one computer to another.

Communication on the Web may be from one individual to another, one individual to many others or many individuals to each other.

Chapter 2 - Literature review



Computer mediated communication (CMC) can be divided into two different categories:

- Synchronous. Parties communicate both ways at the same time, thus real time communication.
- Asynchronous. A time lag among the parties involved; transmitting and receiving messages at different times, like an answering service.

Table 2.19 displays the different synchronous and asynchronous techniques.

Table 2.19 Synchronous and asynchronous techniques

Synchronous techniques	Asynchronous techniques
Chat rooms	E-mail
Audio teleconferencing	Listservs
Video teleconferencing	Discussion groups
Web phones	Bulletin boards

(Clarke, 1998; Alessi & Trollip, 2001)

2.6.1 E-mail

Different ways of communicating exist in cyberspace and e-mail seems to be one of the most significant ways to communicate. The visitor can easily be reached online by means of e-mail.

E-mail is an asynchronous communication technique, because the mail waits in the recipients" electronic mailbox until they read it. There are time delays in the communication process.

(Alessi & Trollip, 2001; 375; Clarke, 1998; Shneiderman, 1998:483; Wilson; 1996d)

2.6.2 Discussion groups

Both mailing lists and newsgroups are on-line discussion groups (asynchronous techniques) and are highly targeted, because they focus on very specific topics.



Research has indicated that there can be as many as 10 000 readers with a special interest in a topic. It will be a clever strategy to establish the profile of potential customers, find out where they congregate and join the discussion group wherever it would add value to the site.

(Ellsworth & Ellsworth, 1995:50, 283; Shneiderman, 1998:485; Wilson, 1996d)

Newsgroups

Newsgroup discussions on a specific topic are found on the computer of the Internet Provider. A visitor looks at the comments and can add their own. This way a lengthy discussion can develop.

If there is a message to be conveyed, do it subtly by including your ""signature" at the end of the e-mail message. This is a miniature advertisement for your business and could include valuable information to communicate to interested parties. A well-designed "signature" will definitely produce hits on the web page, because the people are interested in the topic. (Ellsworth & Ellsworth, 1995:49-50, 283; Shneiderman, 1998:485; Wilson, 1996d)

Mailing list

With a mailing list the tendency of a more serious discussion involvement has been pinpointed and the comments from the discussion group accumulate in the e-mail box or in a daily digest form. This kind of approach works well when directed to a specific group. (Niche)

Hosting a mailing list of customers or users proves to be great customer support and also sparks revisits. When hosting such a list, one has to take into account that the maintenance of keeping the address list clean and moderating the discussions could take up some time. This could be an asset to the web site, especially if it could be put to good use to promote the business.

2.6.3 Bulletin boards

In contrast to the virtual world of the Web, a bulletin board in actual life is a device where to people can pin pictures, announcements, advertisements etc. A virtual bulletin board is a Web site to which users can connect and access or post items. These items can be in the form of multimedia programs, text messages, images or photographs.

Chapter 2 - Literature review 66



A bulletin board may be restricted to a specific group who have to produce a password to access or it could be open to the public. Bulletin boards are asynchronous because users access the site at their own convenience. Information is not delivered to the computer, as is the case with e-mail. Users have to visit the site and browse though the contents.

(Alessi & Trollip, 2001:376; Ellsworth & Ellsworth, 1995:47-50,283-288; Shneiderman, 1998:148; Tips for writing.., 2000; Tyson, 2001; Wilson, 1998b)

2.6.4 Listservs (Mailing list server)

A listserv is a mailing address that contains a list of other mail addresses. Any member sending a mail message to the listserv actually sends this message to all the addresses on the list.

The list owner, who administrates the listsery, sets up a listsery. The person enters the names and e-mail addresses of the members of that specific group. Members then automatically send mail to the whole group.

Different versions of listservs exist. Some have open subscriptions and some of them are closed, which implies that entries have to be made by the list owner.

Listserv is a special kind of e-mail, thus also an asynchronous technique. (Alessi & Trollip, 2001:375;Tips for writing...,2000; Wilson, 1995)

2.6.5 Chat rooms

Chat rooms are a form of synchronous communication. It is a web site to which users can connect. A user can send a message to the site and it is immediately visible on the screens of all the users connected to the site. Communication by means of a chat room takes place in real time, like a telephone conversation, except that the conversation is in writing.

Chat rooms may be public or private. Specific groups of users e.g. members in the design industry working on a specific project may have access to the chat room. (Alessi & Trollip, 2001; 376; Tyson, 2001)



2.6.6 Audio teleconferencing

Audio teleconferencing is similar to chat rooms and is also an example of synchronous communication. Two or more users have to connect to a Web site, which has to support audio conferencing. Plug-ins and additional software are available for Web browsers that do not support this technique.

All the users participating in the teleconference have to arrange a specific time. The users have to be in possession of microphones and speakers. Some teleconferencing software allows users to see the information on the other user's screen. This feature allows the users to discuss data that they can all view on their computer screens. (Alessi & Trollip, 2001; Patterson, 1997:99)

2.6.7 Video teleconferencing

Video teleconferencing is also a synchronous technique and very similar to audio teleconferencing. Computers connected to the Web site have to be equipped with microphones, speakers, video cameras and special software e.g. Microsoft NetMeeting. The principles of operation are exactly the same as that of the audio teleconferencing. (Alessi & Tropllip, 2001; Patterson, 1997:101; Shneiderman, 1998:491)

2.6.8 Business opportunities through information and communication

Cyberspace is a business communication vehicle and not a selling tool and the companies and industries that realise that, have booming businesses. According to research strategists from successful marketing, communication is first and foremost and mindset is crucial in order to develop the right focus. This is a total paradigm shift, as this differs completely from the traditional way of thought.

The cyber surfer wants different kinds of information such as information that will assist them in:

- investing more wisely,
- their jobs,
- planning vacations,
- learning more about things that interest them,
- researching more effectively,
- buying online; and

Chapter 2 - Literature review



Customer support

The web has the ability to provide the very best in customer support. People want to communicate; they want to be heard and they want to feel special. This is easy with the different possibilities available with regard to e-mail.

Frequently asked questions (FAQ) or a troubleshooting decision tree, are great ways to assist customers with queries. The greater the wealth of information, the more valuable a searchable database becomes. This is done by putting the customer service and support operations online and posting the answer to a frequently asked question online by means of the autoresponder e-mail program.

Another advantage of substantial communication regarding customer support on the web is that enquiries by phone can be referred to the site for detailed and complete information. This is bound to lessen the amount of phone calls and will ensure satisfied customers.

Wilson (1998b)

2.7 Summary of literature review

This review encompasses all the research done to answer or partially answer the issues regarding the main research question and the sub research questions.

The research also covers the important issues regarding the design and development of a successful and functional product; a web site for the Program in Interior Design

During the course of the research the focus is placed on:

- The functionality of a Web site as a marketing tool.
- The importance of communication within the global marketing environment.



CHAPTER 3

DESIGN, DEVELOPMENT AND PRODUCTION

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



KI MIST		Page
3.5	Stage 3: Development	99
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	Phase 1	102
3.5.5.2	Evaluation of phase 1	103
3.5.5.3	Phase 2	103
3.5.5.4	Evaluation of phase 2	105
3.5.5.5	Phase 3	105
3.5.5.6	Evaluation of phase 3	106
3.5.5.7	Phase 4	106
3.6	Production	109



CHAPTER 3

DESIGN, DEVELOPMENT AND PRODUCTION

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
	Goal	 Build a web site to serve as a functional marketing tool. Create effective communication channels
	Target	 Target group specification Target group needs
Task	Task	Attract visitors to the site, maintain interest Create a facility to enhance communication
	Information	 Provided by the client Presentation of the above information in manageable chunks
	Media	 Use of text, graphics, animation
	Project	Involved parties in projectOutline of project

(Reeves, 1994)



Table 3.2 (continued)

Stages in process	Activities	Output
	 Objectives 	 Functional marketing tool. Functional communication facility.
Design	Specifications	 As discussed in literature review. (Chapter.2) As decided upon by clients & researchers.
	 Delivery system 	 WWW, Internet and CD.
	 Flowcharting 	Formatting of screens.Series of diagrams.
	 Program editor 	 Dreamweaver
	Storyboarding	 Preparation of text and images. Paper and pencil sketching
Development	 Prototype 	Creating the product
	Formative evaluation	 Constant evaluating throughout the development stage Formal testing by means of questionnaires
Production	 Creating web site 	Prototype available for evaluation

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 form 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 <u>Target population analysis</u>

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 all 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 stiffy 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
Goal analysis					
 How should a web site be structured to serve as a 	~	~	✓	~	~
functional marketing tool?Which communication facilities will enhance communication?	~	~	✓	1	✓
 Target analysis Who is the target population? What are their needs? 	*		✓	1	
 Task analysis How can visitors be attracted to the site? How can communication be enhanced? 		4	✓		✓ ✓
 Information analysis How should information be presented to promote marketability? 		✓		1	√
 Media analysis Which media instruments should be used? 	1	1			~
 Project analysis Who are the parties involved in the project? 	✓			1	
How should the product be designed and developed?					1



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

3.3.3.1 <u>Interviews</u>

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 <u>Literature review</u>

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	 Head of the Program. (client) Lecturers involved in the Program. Students in the different years of study. Potential students. Parents of potential students. 			
Focus group	 Representatives of each Department in the School of the Built Environment Architecture, Landscape Architecture and the Program.) Enrolled students in the Program. 			
Questionnaires	 Potential students. Enrolled students in different years of study. Lecturers. CBT students. Experts. 			

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 <u>Target analysis</u>

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		
Target group		Potential Students		Enrolled students	
Questionnaires completed.			20	2	5
		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
rtoud & Wite Eligion.	Gauteng	14	70	18	72
	North West	3	15	4	16
	Namibia	1	5	0	0
Demographics.	Northern Province	0	0	1	4
Demographics.	Mpumalanga	0	0	1	4
	Free State	2	10	0	0
	Botswana	0	0	1	4
Accommodation.	House	11	55	15	60
Accommodation.	Flat	4	20	2	8
	Rented room	0	0	2	8
		5	25	6	24
Computer literacy.	Varsity residence Excellent	10	50	2	8
Computer interacy.	Good	6	30	14	56
		4	20	7	28
	Average			2	
Computersons	Poor	0	0		8
Computer access.	Yes	20	100	25	100
Internet connection.	Yes	13	65	21	84
Information object	No	7	35	4	16
Information about Program?	Posters	6	30		
	Word of mouth	3	15		
	School	11	55		cable for
	Internet	0	0	this o	group
Current means of obtaining	Library	9	45		
information for research	Magazines	8	40		
topics.	Internet	11	55		
	Surfing	5	25	13	52
Obtain information on a	Search engine	13	65	21	84
subject on Internet by	Trial & error	8	40	15	60
means of the following:	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
3	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

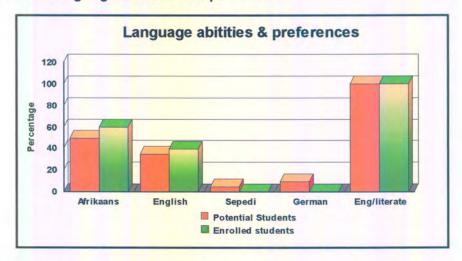


Figure 3.1 reveals that, even though different languages groups were present, the English proficiency in the total group was 100%. Therefore a web site in English will suffice.

Figure 3.2 Demographic results of the two target groups

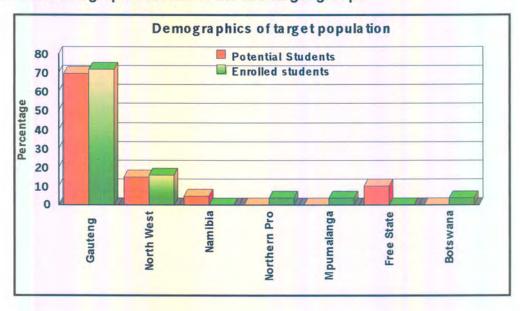


Figure 3.2 reveals that students enrol from different regions and this fact allows for the assumption that communication and information via a web site would be of value to all the parties involved in the **Program**.



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

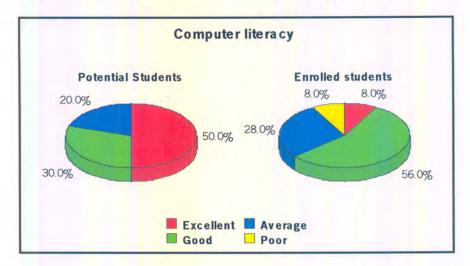


Figure 3.3 reveals that the majority of the total group has an above average knowledge of the computer, which would prove to be an asset where the use of a web site is concerned.

Figure 3.4 Substantial factors regarding the total target group

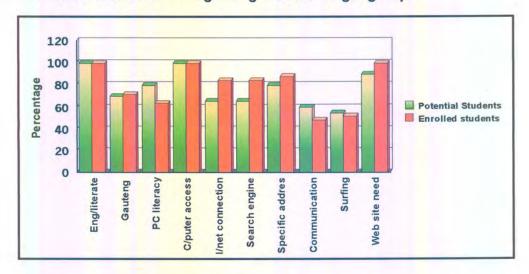


Figure 3.4 reveals the most important results of the total target population during the analysis phase. The following issues appearing in Figure 3.4 are discussed briefly:

- 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. Therefor 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		
Marketing	 Use of different colours. Establish professional links. Create a general links page. Enable search engine capabilities. 		
Communication	 Provide e-mail facility on each page. Provide a listserv facility. Provide a bulletin board facility. Provide space for exhibition of current projects. 		

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
Shneiderman, (1998: 99)	Shneiderman describes design as inherently creative and unpredictable. Therefor it is imperative that designers have to combine a sound knowledge of technical feasibility with a mystical aesthetic sense of what attracts the users.
Carroll and Rosson (1985)	Carroll & Rosson characterise design in the following manner: Design is a process, therefore it cannot be statistically represented. The design process is nonhierachical, which implies freedom of navigation. The process is radically transformational, partial and interim solutions during the development process may not be applicable in the final design. Design involves the discovery of new goals.
Hannafin & Hooper (1989)	Hannafin & Hooper identify the following functions of screen design: Focusing attention. Developing and maintaining interest. Promoting deep processing. Promoting engagement. Facilitating navigation throughout.

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								
	Create a marketing tool for the Program	 An attractive home page with internal links to attract attention and take the user into the site. External links to professional related sites. A link page with external links to and from design related sites. Create the site in a manner to ensure search engine success. 								
•	Create functional communication channels	 Active e-mail button on each page in the site. Provide a bulletin board facility. Provide a listsery facility to the different groups. 								

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

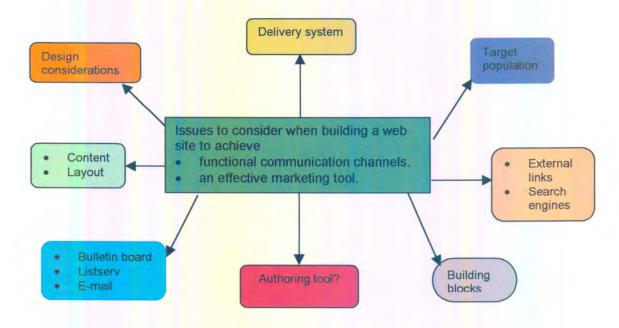
Numerous issues regarding the content should be kept in mind when designing a web site. The nature of the target population determines the layout and presentation of the content to a great extent. Therefore the client supplied the specific content. The logic flow thereof was discussed by the client and 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 <u>Screen Design</u>

"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

						CI	ien	t sp	ec	ific	atio	ons						
		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	Design implications
	From 17yrs up				1					1								Modern, funky colors
	Artistic flair				1				1	1				1				Eye catching look
	Logical					1												Consistent layout
	Keen web surfers	1		1												1	1	Functional links
Target group characteristics	Professionals in design field				1		1	1			1		1	1	1		1	Professional look,functional info, marketing prospects
aracte	Computer access		1													1		Research, communication possibilities
up ch	Need information/feed- back						1	1								1		Functional communication channels
gro	Seek specific information	1		1		1										1		Search engines, relevant content
Irget	Need access to field-related info			1									1			1	1	Active links, e-mail facility, downloads
Ta	Research		1	1												1		Research facility, portals, search engines
	Internet knowledge	1														1		Surfing, search engines
	3-Dimentional				V				1									Animation, colour coding
	Creative				/				1	1				1				Eye catching
	Limited amounts of information					1					1							Relevant info in Manageable chunks
	Organized information					1						1						Sections
	Communication needs						1	1										Interaction
	Need to identify														1			Icons, symbols
	Group participation						1	1					1					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

			C	Con	po	siti	on	of t	he	site									
		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	Design specifications
	Modern, funky colors	1	1								1			1					Web safe colors taker from corporate logo
	Eye catching	1				1					1				1		1		Color combination and line structure
	Consistent layout		1	1	1	1	1		1	1				1				1	Structural ,white space, logo at top of each page
	Functional links	1	1							1	1		1						Active hypertext
us	Marketing	1									1		1	1					Counters, banners, links to and from other sites
atio	Functional communication							1			1	1	1						E-mail facility, bulletin board, listserv
Design implications	Manageable portions content				1		1		1							1		1	Chunking
E	WWW / links							1			1		1						Marketing tool
lgn	Content				1	1			1			1				1	1		Relevant, in chunks, printable.
Des	Visual impact	1		V		1					1		1	1				1	sections distinguished with colors, ample white space
	understandable/ clear		\	1	1	1	1			1							1		font Arial and large enough for everyone to read .Short sentences
	Research facility							1			1		1			1			Research toolkit, links to portals and search engines
	symmetric/ asymmetric		1	1							1		1						use of color ,lines and logo
	Animation	1									1				1				Animation, banner
	Corporate logo, icons and symbols	1		1					1										Program identification from home page throughout
	Interaction		1					1		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \			1						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
	Text attributes
Type face	 Headings - Comic Sons. Content - Arial. Navigation - Arial. The above typefaces are sans serif and easy to read.
Print size	 Headings - large (26) to attract the attention. Sub- headings - medium size. (14) Content text - normal. (12) Content in tables - small (8) to prevent using too much space. Navigation bar - small (8) to cope with the limited space.
Colour	 Black text. Links automatically change to blue and maroon when visited.
Type faces	 Bold - Main headings and important words. Underline - to indicate active links only.
Justification	 Headings - centred. Body text - left justified as indicated in the literature.
Case	 Combination of upper and lower case for easy reading. (Sentence case)
Buttons	 Text buttons used on navigation bar. Hypertext buttons used for sub-menus below the headings on each screen. Default Internet buttons may also be used.
Symbols and icons	 The home button is assisted by alternative text and appears on the top right hand side on each screen. 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.) Unique logos of related design companies appear on the Useful Links page.
Animation	 Animated text as well as animated images do not currently feature on the site, but will be incorporated in future.
Layout of text	 Text in the centre of the screen covering not more than 14 centimetres, Enough white space to ensure clear display of text. Blank lines to indicate new paragraphs. Leaf image appears at the bottom of each screen to indicate the end and to create space between chunks of information. Downscrolling limited to an average of 2 screens. Horizontal scrolling not used. Information provided in manageable chunks to prevent information overload.



Table 3.11 (continued)

Design Specifications	Implementation in this prototype								
Screen design attributes									
Simplicity	 The design is straight forward and was created by using a grid Basic structure on each page is identical Single column format is used. Arial and Comic Sans are the only typefaces used 								
Consistency	 Screen layout throughout the site is consistent. and is repeated on every screen. Allotted colours to specific subjects, which serve as identification throughout the site. Navigation bar and Program logo on the left hand side on every screen. Major headings centred at the top of each screen. 								
Clarity	Design terminology familiar to the target group and related to the industry. Bulleted lists where applicable.								
Aesthetic consideration: -Balance -Harmony -Unity -Rhythm	 Using different shapes and sizes creates informal balance. The asymmetrical balance provides stability. The consistent use of colour, graphics, fonts and general page layout ensure unity, rhythm and harmony throughout the site. 								
White space	 Well-planned white space enhances balance and creates lightness to the screen display. Assists in the chunking of information and separation of different ideas and subjects. 								
Colour combinations	 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 Program logo (appearing in the top left corner) as a guideline. Earthy colours were used for the framework. Each subject is identified by a specific colour and consistently used throughout the site. The background is a sand colour and compliments the black text. Each screen employs only two main colours; the sandy background and one earthy colour used for the framework. The colour combinations are pleasing and attractive. The use of a hue per subject is functional and enhances identification. 								
Graphics and images	 GIF AND JPEG are the best-suited images to utilise. The images used should not exceed 50K, to ensure fair download time. To accommodate text-only browsers, alternative text was provided for every image. All the images were supplied by the client and are either student work or work from design related companies, individuals or institutions. 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 								



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 WYSIGWYG 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.



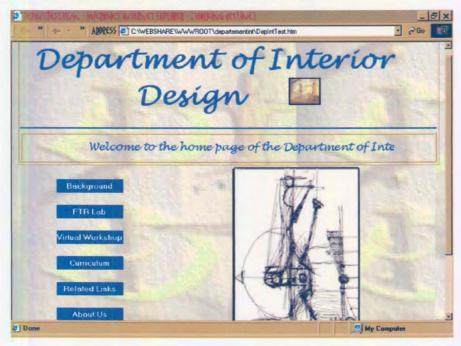
The middle section of the logo was extracted, enlarged and embossed to form a background image. The font, Lucida Handwriting, in dark blue colour, was used. The same background, without the embossing was used as background for the following screens.

Text animation was applied on the home page to welcome the user to the site.

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

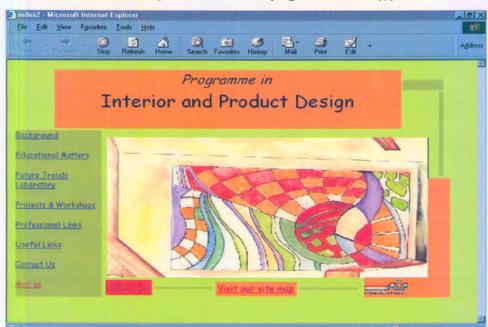


Figure 3.7 Example of the home page - Phase 2 (†)



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

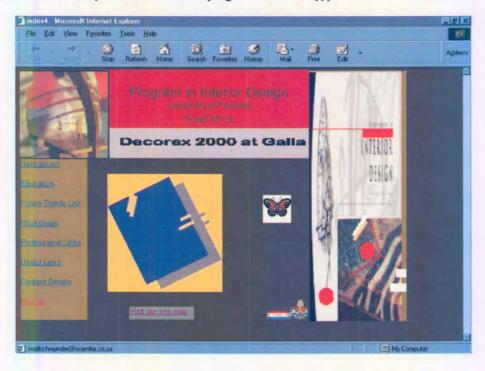
The client provided a design, which was totally different. The theme was ethnic and depicted African influences. Strong, contrasting colours, such as red, blue, black and white were used.

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

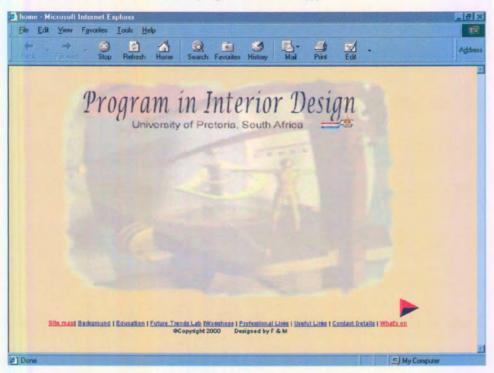
The client was abroad for a long period of time, the proposed design of a home page from the representatives from the School of the Built Environment did not materialise and time was running out. The developers were forced to resort to a neutral home page.



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 forth 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 (†)

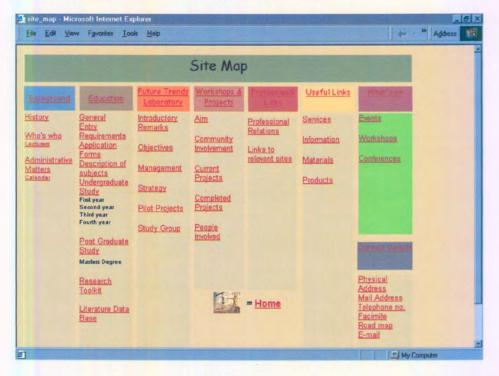
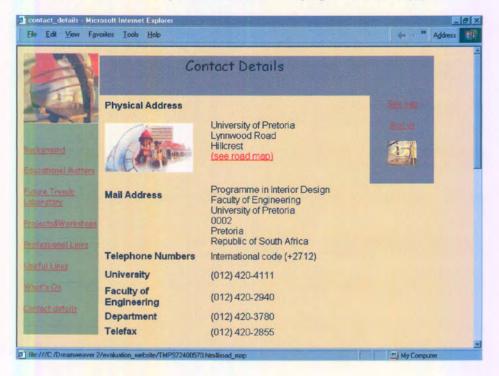


Figure 3.11 displays an example of a structured page included in the prototype web site.

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

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



CHAPTER 4

EVALUATION

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
Evaluation	 Summative evaluation Revise product 	 Process and report results Evaluation reports - users, experts and lecturers. Refinement of program
Report	 Report findings and compile recommendations 	Research report
Conclusion	Report concluding statements	 Deliver product

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
Information needs	 What are the characteristics of the target population? Computer literacy? Ability/aptitude? Different target groups What are the needs? 	Chapter 3
Design issues	 What methods should be applied to ensure the effectiveness of the site? What are the design considerations? What are the practical considerations? 	Chapter 2 & 3
Marketing	What methods should be applied for optimal exposure to web-based marketing?	Chapter 2 (Literature & evaluation phases))
Communication	How can efficient and effective communication be obtained?	Chapter 2 & 3 (Literature & evaluation phases)
Evaluation/Findings	 How is functionality and sustainability ensured? Does the site prove to be functional? What are the prerequisites for sustainability? 	 Chapter 4 (Evaluation phase) Chapter 5 Chapter 2

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. Therefor 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 <u>Evaluation questionnaire for student users and CBT students</u>

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 <u>Evaluation questionnaire for experts</u>

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.

Chapter 4 - Evaluation

116

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.



CHAPTER 5

FINDINGS

		Page
5.1	Introduction	119
5.2	Evaluation of the program	121
5.2.1	Instrument used	121
5.2.2	Description of the respondents	122
5.2.2.1	<u>Students</u>	122
5.2.2.2	<u>Lecturers</u>	122
5.2.2.3	CBT students	122
5.2.2.4	Experts	122
5.3	Findings	123
5.3.1	Students	123
5.3.1.1	Interpretation of students' results	125
5.3.2	Lecturers	126
5.3.2.1	Interpretation of lecturers' results	128
5.3.3	CBT students	129
5.3.3.1	Interpretation of CBT students' results	131
5.3.4	Experts	132
5.3.4.1	Interpretation of experts' results	134
5.3.5	Average results from the different respondent groups	138
5.3.6	Relevant target analysis results	140
5.3.6.1	Interpretation of results from questionnaires 1 and 2	140
5.4	Discussion of relevant findings	141
5.4.1	Design objective 1	142
5.4.2	Design objective 2	143
5.4.3	Design objective 3	144
5.4.4	Design objective 4	145
5.4.5	Summary on the findings regarding the design objectives	147



CHAPTER 5

FINDINGS

5.1 Introduction

This chapter primarily reports on the findings of the summative evaluation phase. The formative evaluation will also be mentioned. Four different groups evaluated the web site by means of the same evaluation questionnaire. The instrument is described in detail in 5.2.1.

The researcher anticipated that each group would look at the site from a different perspective and interpret and answer every question in their own way. Therefore the same questionnaire (a single questionnaire) was specifically used for all the groups. The results revealed that the correct decision regarding the single questionnaire was made.

A few questions from target analysis questionnaires, Questionnaire 1 (Appendix A) and Questionnaire 2 (Appendix B) will be utilised in this chapter, because of the relevance to the research questions.

During the course of this chapter the results to the questions will be analysed and the researcher will determine whether the design objectives were met by means of the outcomes from the questions.

Following in Table 5.1 are the different objectives and the relevant questions from the different questionnaires.

Table 5.1 Questionnaire and related objective to be met (†)

Objectives	Evaluation	Open day	Target analysis
	(questionnaire3)	(questionnaire 1)	(questionnaire 2)
The site has to be marketable.	-(Q4) Use of colours(Q5) Choice of fonts(Q10) Different navigation options on site map clear & easy to use(Q11) Useful links page will attract visitors.	Section 6 - Marketing.	-(Q18) Way of obtaining specific information on the Internet(Q20) Web site beneficial for marketing.
A functional communication facility must be established.	-(Q6) Layout of site map(Q16) Establish functional communication facilities(Q17) Contact details are clear.	Section5 - Internet use.	-(Q17) Use of the Internet(Q21) Communication facility on the web site.
Create a functional web site with sound design principles.	-(Q1) Appearance and overall look(Q2) Readability. (Q3) Consistency of all elements(Q4) Use of colours(Q8) Consistency of buttons(Q14) Presentation of content is consistent.	Not applicable for this objective	Not applicable for this objective
Ensure that the site is a functional and workable product.	-(Q2) Readability(Q3) Consistency of all elements(Q5) Choice of fonts(Q6) Layout of site map(Q7) Navigation to & from homepage(Q9) Layout of site map for navigation(Q10) Different navigation options on site map clear & easy to use(Q11) Useful links page will attract visitors(Q12) Amount of content in manageable chunks(Q15) Choice of graphics(Q19) Download time of pages(Q20) Web site is easy to use.	Not applicable for this objective	Not applicable for this objective

Chapter 5 - Findings 120



5.2 Evaluation of the program

5.2.1 Instrument used (†)

A questionnaire with 19 questions was handed out to 3 of the 4 different groups of respondents (students, lecturers, and CBT students). The questionnaire was compiled in the following manner:

- Section 1: Layout of the web site. (6 questions)
- Section 2: Navigation. (5 questions)
- Section 3: Content. (4 questions)
- Section 4: Communication, support and ease of use. (4 questions)
- Section 5: An open question for general comments on the total site was provided.

(Appendix C)

The questionnaire handed out to the fourth group (expert evaluators) was identical to the layout above, but a space for comments and suggestions was provided after each section. A distinct request was made to utilise the space.

The respondents had to evaluate each of the questions according to the five point Likert scale with the following meanings attached to the numbers:

1 = Excellent

2 = Good

3 = Above average

4 = Average

5 = Poor

The researcher combined the following results for the purpose of the interpretation of the findings:

1+2 = Good

3 = Average

4+5 = Poor

Chapter 5 - Findings



The results of the single questionnaire indicated a successful evaluation, as ample relevant data was gathered.

5.2.2 Description of the respondents (†)

5.2.2.1 Students

Twenty-five enrolled students from different levels of study (1st to 4th year), involved in Architecture and Interior Design (**Program**), represented the majority of the target population.

5.2.2.2 <u>Lecturers</u>

Four lecturers, the **client** being one, involved in the School of the Built Environment, were also representative of the target population. The **client**, who supplied most of the content, was part of the design team and participated in the formative evaluation phase.

5.2.2.3 Computer Based Training students (CBT students)

The CBT students are currently completing their final year of study for a diploma in Computer Based Training. They have had extensive exposure to all aspects of web design and could therefor evaluate the site in terms of functionality and workability.

5.2.2.4 **Experts**

Eight experts in the field of web and instructional design & management participated in the evaluation of the product. Each one received an evaluation form by e-mail. They were individually contacted and asked to participate, before sending a questionnaire. This ensured the return of a completed questionnaire.

Chapter 5 - Findings 122

5.3 Findings (†)

The results of the different groups are revealed in separate tables and discussed in detail. The percentages were calculated as follows:

1+2 = Good

3 = Average

4+5 = Poor

Thereafter the objectives that had to be met in order to answer the research questions will follow.

5.3.1 Students (†)

Twenty-five students participated in the evaluation phase and the results obtained from the evaluation are revealed in Table 5.2.

Table 5.2 Results from the students (†)

Note: The following calculations are used in the table:

1+2 = good 3 = average (ave) 4+5 = poor

Questions	Respondents out of 25 evaluating the web site							
Layout of the web site		2	good %	3	ave %	4	5	pool %
The appearance of the web site and the overall "look" is:	6	8	56%	4	16%	4	3	28%
2. The readability (size and space of writing) on the pages is:	6	14	80%	3	4%	2	3	16%
3. The consistency of all the elements through out the web site is:	3	11	56%	7	28%	4	0	16%
4. The use of colours in the web site is:	6	8	56%	3	12%	4	4	32%
5. The choice of fonts (type of writing) is:	2	12	56%	5	20%	4	2	24%
6. The layout of the site map is:	3	7	40%	7	28%	8	0	32%
Navigation								
7. The navigation to and from the homepage is:	6	11	68%	4	16%	3	1	16%
8. The consistency of the buttons through out the web site is:	7	8	60%	4	16%	6	0	24%
The layout of the site map for navigation purposes is:	4	7	44%	8	32%	5	1	24%
10. The different options of navigation in the site is clear and easy to follow:11. The "Useful link" page will attract more visitors:		11	68%	4	16%	4	0	16%
		7	44%	4	16%	8	2	40%
Content								
12. The amount of content per page is presented in manageable chunks:	4	12	64%	7	28%	1	1	8 %
13. The content is understandable and appropriate:	3	13	64%	9	36%	0	0	0%
14. The way in which the content is presented gain the attention of the visitor:	1	7	32%	7	28%	8	2	40%
15. The choice of the graphics is:	3	5	36%	5	20%	6	6	44%
Communication, support and ease of use								
16. The possibility of communicating with other students and lecturers, with a bulletin board and listsery will be:	3	12	60%	6	24%	3	1	16%
17. The contact details on the web site is easy accessible and clear:		13	76%	3	12%	3	0	12%
18. The web site enables and promotes learning:	0	9	36%	14	52%	2	1	12%
19. The download times of the web pages is:	6	8	56%	8	32%	3	0	12%
20. The web site is easy to use:	7	15	88%	3	12%	0	0	0%



5.3.1.1 <u>Interpretation of students' results</u>

The results in Table 5.2 are addressed and interpreted according to the different sections in which the questions were asked and suitable comments are supplied.

Layout of the web site.

The results reveal that the majority of the students were satisfied with the general layout. 57,3% rated it as good, 18% as average and 24,6% as poor. The students, being artistic in nature, obviously looked at the site from a design perspective. From the general comments the researcher could establish that a more modern look and choice of fonts as well as the use of more exciting colours would have been appealing to a greater majority.

The only point of concern was the layout of the site map, which was only approved by 40% of the students. The home button was only visible after scrolling and some links were not functioning. The colour combination was also a matter of discussion.

Navigation.

The results reveal that 56,8% of the students were satisfied with the navigation in comparison with 24% that rated it as poor. Comments such as "the navigation bar should have been a different colour" and "the font is too ordinary", revealed a degree of ignorance regarding the questions. Therefore, the fact that the majority rated it as good was excepted.

A matter of concern however, remained the layout of the site map for navigation and the "useful links" page, which was rated as good by a mere 44%.

From comments made about the "useful links" page, the researcher established that the majority of the students misunderstood the intention of the page. Imaginary logos were used and it was clear that they did not read the explanation stating the purpose at the top of the page.

Content

Only 49% rated the section on the content as good, 28% felt that it was average and 23% revealed that it was poor. The overall impression was that the students did not find

the content presentation satisfactory, but looking at the questions separately only two matters caused concern.

The way in which the content is presented did not gain the attention. The content was supplied by the client and is supposed to provide information. Therefore it does not appear exciting enough for the majority of the students. Even though the graphics are examples of student work and design related fields, they found it not satisfactory. To a great extent the perspective of the designer nature played a role.

Communication, support and ease of use

The majority of the students agreed that that this section was satisfactory. 63,2% rated it at good, 26,4% rated it as average and only 10,4% rated it as poor.

Issues regarding communication and ease of use were rated above average and good.

Therefore no matters of concern were documented.

Figure 5.1 graphically displays the results indicated in Table 5.2.

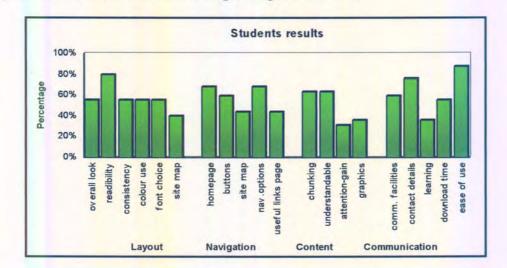


Figure 5.1 Results of students regarding the web site

5.3.2 **Lecturers** (†)

Four lecturers participated in the evaluation phase and the results obtained from the evaluation are revealed in Table 5.3. One of the lecturers is also the client and had insight into the design phase.

Table 5.3 Results from lecturers (†)

Note: The following calculations are used in the table:

1+2 = good 3 = average (ave) 4+5 = poor

Questions	Respondents out of 4 evaluated the web site							
Layout of the web site	1	2	good	3	ave	4	5	poor
1. The appearance of the web site and the overall "look" is:	0	2	50%	2	50%	0	0	0%
2. The readability (size and space of writing) on the pages is:	1	2	75%	1	25%	0	0	0%
3. The consistency of all the elements through out the web site is:	0	2	50%	2	50%	0	0	0%
4. The use of colours in the web site is:	1	2	75%	1	25%	0	0	0%
5. The choice of fonts (type of writing) is:	1	2	75%	0	0%	1	0	25%
6. The layout of the site map is:	2	1	75%	1	25%	0	0	0%
Navigation								
7. The navigation to and from the homepage is:	2	0	50%	2	50%	0	0	0%
8. The consistency of the buttons through out the web site is:	3	1	100 %	0	0%	0	0	0%
The layout of the site map for navigation purposes is:	0	3	75%	1	25%	0	0	0%
10. The different options of navigation in the site is clear and easy to follow:		3	100 %	0	0%	0	0	0%
11. The "Useful links" page will attract more visitors:		2	50%	1	25%	1	0	25%
Content								
12. The amount of content per page is presented in manageable chunks:	0	1	50%	2	25%	0	1	25%
13. The content is understandable and appropriate:	2	1	75%	1	25%	0	0	0%
14. The way in which the content is presented gain the attention of the visitor:	1	2	75%	0	0%	1	0	25%
15. The choice of the graphics is:	1	2	75%	1	25	0	0	0%
Communication, Support and ease of use								
16 The possibility of communicating with other students and lecturers, with a bulletin board and listsery will be:	4	0	100 %	0	0	0	0	0
17. The contact details on the web site is easy accessible and clear:		1	100 %	0	0%	0	0	0%
18. The web site enables and promotes learning:		2	75%	1	25%	0	0	0%
19. The download times of the web pages is:	2	1	75%	1	25%	0	0	0%
20. The web site is easy to use:	4	0	100 %	0	0%	0	0	0%



5.3.2.1 <u>Interpretation of lecturers' results</u>

The results in Table 5.3 are addressed and interpreted according to the different sections in which the questions were asked and suitable comments are supplied.

Layout of the web site

The results from the lecturers revealed a positive rating of 66,6%. Only 29,1% rated it as average and 25% as poor. A matter of concern was that only 50% of the lecturers rated the overall look as good. The rating on this question should have been higher, as this was the initial idea from the client.

A possible reason for the change of attitude could have been the decision of the School of the Built Environment to obtain web sites with a uniform look or it could be attributed to a lack of internal consulting.

Navigation

A substantial majority (85%) revealed that they were satisfied with the navigation issues. 15% rated the issues as average.

50% rated the navigation to and from the home page as good and 50 % as average. Therefore the above issue was accepted as satisfactory.

Content

The rating of the lecturers revealed a satisfaction regarding the content. 68,75% rated it as good, 18,75% as average and 12,5% as poor. The lecturers supplied the content, therefore the data was no surprise to them, and they did not expect exciting, design information.

The rating of the chunking of information revealed that lecturers were of the opinion that the amount of content should be less. Only 50% of the lecturers were satisfied. 25% rated this issue as average, while 25% rated it as poor. These results created concern and will be kept in mind during the final phase of change.

128

Communication, support and ease of use

The results concerning these issues reveal a total satisfaction on the side of the lecturers. A majority of 90% rated the communication, support and ease of use issues as good and 10% rated average.

Figure 5.3 graphically displays the results indicated in Table 5.3

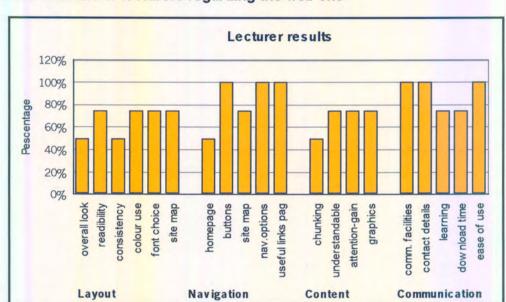


Figure 5.3 Results of lecturers regarding the web site

5.3.3 CBT students

Thirteen CBT students participated in the evaluation phase and the results obtained from the evaluation are revealed in Table 5.4.

Table 5.4 Results from CBT students (†)

Note: The following calculations are used in the table:

1+2 = good 3 = average (ave) 4+5 = poor

Questions	Respondents out of 13 evaluating the web site							
Layout of the web site		2	good	3	ave	4	5	poo
1. The appearance of the web site and the overall "look" is:	6	4	77%	2	15%	1	0	8%
2. The readability (size and space of writing) on the pages is:	6	6	92%	0	0%	1	0	8%
3. The consistency of all the elements through out the web site is:	7	4	85%	2	15%	0	0	0%
4. The use of colours in the web site is:	5	7	92%	0	0%	1	0	8%
5. The choice of fonts (type of writing) is:	6	6	92%	0	0%	1	0	8%
6. The layout of the site map is:	8	4	92%	1	8%	0	0	0%
Navigation								
7. The navigation to and from the homepage is:	7	4	85%	1	8%	1	0	8%
8. The consistency of the buttons through out the web site is:	7	6	100 %	0	0%	0	0	0%
9. The layout of the site map for navigation purposes is:	7	6	100 %	0	0%	0	0	0%
10. The different options of navigation in the site is clear and easy to follow:		6	100 %	0	0%	0	0	0%
11. The "Useful links " page will attract more visitors:		3	85%	1	8%	1	0	8%
Content								
12. The amount of content per page is presented in manageable chunks:	4	5	69%	4	31%	0	0	0%
13. The content is understandable and appropriate:	7	4	85%	2	15%	0	0	0%
14. The way in which the content is presented gain the attention of the visitor:	9	2	85%	1	8%	1	0	8%
15. The choice of the graphics is:	7	4	85%	1	8%	1	0	8%
Communication, Support and ease of use								
16 The possibility of communicating with other students and lecturers, with a bulletin board and listsery will be:	7	4	85%	2	15%	0	0	0
17. The contact details on the web site is easy accessible and clear:		2	92%	1	8%	0	0	0%
18. The web site enables and promotes learning:		4	77%	2	15%	1	0	8%
19. The download times of the web pages is:	7	4	85%	1	8%	1	0	8%
20. The web site is easy to use:		2	100 %	0	0%	0	0	0%



5.3.3.1 Interpretation of CBT students' results

The results in Table 5.4 are addressed and interpreted according to the different sections in which the questions were asked and suitable comments are supplied.

Layout of the web site

A majority of 88,3% of the CBT students rated the layout as good, only 6,3 % rated it as average and a meagre 5,3% as poor. The overall look was rated as good by 77% of the students and is well above average, even though it received the lowest rating in this section.

The CBT students were not subjective and primarily evaluated the site for functionality and workability. Therefore their input was of great importance.

Navigation

The ratings of all the questions in this section were good. An average of 94% was achieved for the section. The students were impressed with the navigation and comments such as "comfortable and clear navigation" and "an easy ride through the pages", expressed a positive attitude.

Content

A rating of 81% was measured for the total section. 15% rated it as average and only 4% rated it as poor. The students found the content understandable, attention gaining and also approved of the choice of graphics. A few positive comments regarding the graphics were made.

The students did not feel convinced that the content was presented in manageable chunks, because only 69% rated it as good. Therefore attention has to be given to this specific issue.

Communication, support and ease of use

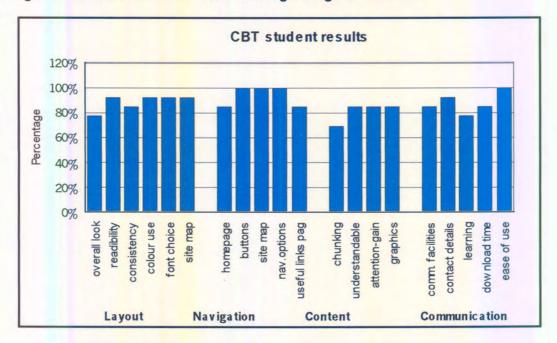
The results revealed that the students felt very positive about this section. 87,8% rated it as good, only 9,2 rated it as average and 3% as poor. Everybody agreed that the site Chapter 5 - Findings

131

was easy to use. The majority agreed that a communication channel with a listserv and bulletin board would be an asset.

Figure 5.4 graphically displays the results indicated in Table 5.3

Figure 5.4 Results of CBT students regarding the web site



5.3.4 Experts (†)

Eight experts participated in the evaluation phase and the results obtained from the evaluation are revealed in Table 5.5.



Table 5.5 Results from experts (†)

Note: The following calculations are used in the table:

1+2 = good 3 = average (ave) 4+5 = poor

Questions	Evaluation by 8 experts							
Layout of the web site		2	2 good		ave	4	5	poo
1. The appearance of the web site and the overall "look" is:	1	6	87 %	1	13%	0	0	0%
2. The readability (size and space of writing) on the pages is:	3	3	75%	1	13%	1	0	12%
3. The consistency of all the elements through out the web site is:	2	3	63%	2	25	1	0	12%
4. The use of colours in the web site is:	3	2	62%	3	38	0	0	0%
5. The choice of fonts (type of writing) is:	3	2	63%	2	25	1	0	12%
6. The layout of the site map is:	3	2	63%	2	25	1	0	12%
Navigation					-			
7. The navigation to and from the homepage is:	1	4	63 %	2	25%	1	0	12%
8. The consistency of the buttons through out the web site is:	4	2	75%	0	0%	2	0	25%
9. The layout of the site map for navigation purposes is:	4	1	63%	2	25%	1	0	12%
10. The different options of navigation in the site is clear and easy to follow:		3	75%	2	25%	0	0	0%
11. The "Useful link" page will attract more visitors:		4	50%	2	25%	2	0	25%
Content								
12. The amount of content per page is presented in manageable chunks:	3	3	75%	0	0%	2	0	25%
13. The content is understandable and appropriate:	3	3	75%	2	25%	0	0	0%
14. The way in which the content is presented gain the attention of the visitor:	2	3	63%	2	25%	1	0	12%
15. The choice of the graphics is:	4	0	50%	3	38%	1	0	12%
Communication, Support and ease of use								
16. The possibility of communicating with other students and lecturers, with a bulletin board and listsery will be:	1	6	87%	1	13%	0	0	0%
17. The contact details on the web site is easy accessible and clear:		1	50%	3	38%	1	0	12%
18. The web site enables and promotes learning:		4	50%	3	38%	1	0	12%
19. The download times of the web pages is:	1	3	50%	2	25%	2	0	25%
20. The web site is easy to use:	4	1	63%	2	25%	1	0	12%



5.3.4.1 <u>Interpretation of experts' results</u>

The results in Table 5.5 are addressed and interpreted according to the different sections in which the questions were asked and suitable comments are supplied.

Layout of the web site

The basic layout of the site according to the results from the experts, was a success. The majority of the experts (68,8%) rated the layout as good, 23,2% rated it as average and 8% rated it as poor.

Issues of concern are the following:

- One expert suggested that the fonts could be smaller in order to limit the amount of scrolling.
- One expert had a problem with the consistency of the elements throughout the site. The red arrow (pointing to the next page) and the "top" button (hypertext for returning to the top) do not appear on the same place on each page. The respondent did not approve of the home page logo at the top on the right hand side.

The respondent suggested that it would be beneficial to: "place the arrow, 'top' and home link in the middle bottom of the page."

This matter did not cause any concern with any of the other experts, but will be noted and returned to if deemed necessary.

One expert had a problem with the choice of fonts used on the navigation bar and suggested that the font should be totally different to any of the fonts used, to ensure visibility.

General comments from the experts regarding possible improvement to the site:

- "The leaf image is too big. Rather use a narrow straight line between the paragraphs"
- "Homepage -the choice of the graphic is good, but too much open space presents a dull and uninteresting opening page. Place the heading in the middle, with a substantial menu bar either at the bottom or on the side"



The majority accepted the **layout of site map** and rated it as good. The only comment worthwhile noting was that the text was difficult to read against the background colours. An adjustment in this regard will add to the functionality of the site map as such.

Even though only 62% rated the **use of colours** as good, 38% rated it as average; implying no poor rating and therefore a satisfactory result.

The following comment conveyed an extremely positive attitude:

" I loved the choice of the colours, the graphics and the general layout."

Navigation

The majority (65,2%) rated the navigation section as good, 25% rated it as average and 9,8% rated this section as poor. The issues causing concern were those with a poor rating and will be discussed briefly.

One expert felt that the navigation to and from the home page was insufficient and supplied the following comment:

"I would have liked a short menu list on the home page. It seems to be incomplete."

The respondent did obviously not see the menu and the red arrow at the bottom of the page as an amount of scrolling was necessary on some of the older monitors.

This matter needs definite refining as the functionality of the site is jeopardised.

One expert did not approve of the layout of the site map for navigation purposes and supplied the following comments:

"I hit the site map first and it did not make much sense at first. I would have liked a simpler, but more explanatory site map."

"The colour of the text disappears on the colour of the background."

The fact that the home page logo was not visible at first sight, that scrolling had to be done and that the text was not sufficiently visible on the background colour could have affected the functionality of the site map.



> Two experts commented on the "Useful link "page. The researcher could determine from some of the comments made that some of the respondents did not completely understand what the use for this page was.

Some of the comments regarding the "link" page were the following:
"Nice idea, but the graphics are not active and does not lead anywhere."
"All the graphics should be the same size and of the same colour quality."

The researcher realised that the explanation with regard to the reason and aim of the page, supplied at the top of the "Useful links" page, must have been insufficient and not visible enough. After explaining the use of the page to the respondents in question, they both agreed that the idea was workable and could in future attract visitors, but only after the site has become known.

Content

The majority of the experts (69%) approved of the section regarding the issues on content. Only 25% rated this section as average and 6% rated it as poor.

Positive comments such as the following were obtained:

"Good chunking really added to the friendliness and informative possibilities of the site" "Choice of graphics is stunning",

Negative comments such as the following were obtained:

"Some pages are too long. Try and use as little scrolling as possible. Split up in sub pages. Some content can still be divided into smaller chunks"

"Graphics could have been a little smaller. Bigger graphics took the emphasis from the

"Graphics could have been a little smaller. Bigger graphics took the emphasis from the content and causes scrolling."

Communication, support and ease of use

The majority of the experts (65,2%) rated the above section as good, 25% rated it as average and only 9,8% gave it a poor rating.

A **communication facility** with the possibility of a listserv as well as a bulletin board was well supported.



The majority also agreed that the contact details were reasonably accessible and clear.

One of the experts made the following comment:

"The link to the application form opens up the home page of the university. Is it possible to link it directly to the form?"

The possibility of a direct link will be investigated.

The experts viewed the site from their own computers, whether at work or at home and at their own time, whether midday or midnight. Therefore everyone would have experienced a different **download time**. 50% of the experts were satisfied with the download time, also acceptable were the 25% who rated it average. Fortunately only 25% found the downloading to be poor.

The reasons for this occurrence could be multiple. The modem could for instance be older and slower. The researcher decided to accept the rating of the majority as successful.

Most of the experts found the site **easy to use**. The following comments revealed a definite positive attitude to the site as a whole:

"I admired the fact that only the necessary information is included, to make the site useful and easy to understand."

"The individual pages were easy to understand and even "newbies" would be able to negotiate their way through the pages."

General comments that revealed a potential successful site were the following:

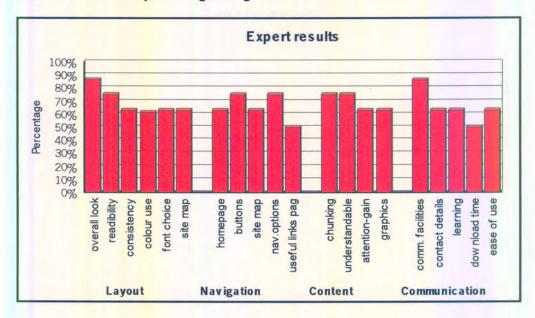
"The site has a professional look."

"This site will definitely contribute to the general objective."

"Great look and feel. Good piece of work!"

Figure 5.4 graphically displays the results indicated in Table 5.5

Figure 5.4 Results of experts regarding the web site



5.3.5 Average results from the different respondent groups

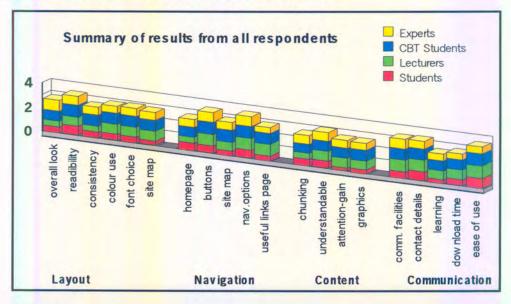
Table 5.6 reveals the results from the different respondent groups on each question in the evaluation questionnaire. An overall average for each question is supplied to assist in the evaluation of the findings regarding the design objectives in 5.4.

Table 5.6 Average results from the different respondent groups

Issues	Students %	Lecturers %	CBT Students %	Experts %	Average of respondents
Layout of the web site					
overall look	56	50	77	87	68
readability	80	75	92	75	81
consistency	56	50	85	63	64
colour use	56	75	92	62	71
font choice	56	75	92	63	72
site map	40	75	92	63	68
Navigation					
homepage	68	50	85	63	67
buttons	60	100	100	75	84
site map	44	75	100	63	71
navigation options	68	100	100	75	86
useful links page	44	100	85	50	70
Content					
chunking	64	50	69	75	65
understandable	64	75	85	75	75
attention-gain	32	75	85	63	64
graphics	36	75	85	63	65
Communication, supp	ort and eas	e of use			
communication facility	60	100	85	87	83
contact details	76	100	92	63	83
learning	36	75	77	63	63
download time	56	75	85	50	67
ease of use	88	100	100	63	88

Figure 5.5 graphically displays the average percentage obtained for each question regarding the average percentages obtained from the different respondent groups as indicated in Table 5.6

Figure 5.5 Summary of results from all respondents



5.3.6 Relevant target analysis results

In attempting to achieve certain design objectives, the researcher found it necessary to include the results of specific questions asked in questionnaires 1 and 2 (target analysis). The respondents used in questionnaire 1 were **potential students**, while those used in questionnaire 2 were **enrolled students**.

Table 5.7 reveals the specific questions regarding the target population taken from questionnaire 1 and questionnaire 2 as well as the results obtained for each question.

Table 5.7 Results from relevant questions in questionnaires 1 & 2 (†)

Questions	Variants	% potential students (Q 1)	% enrolled students (Q 2)	% average of total respondents
Where did you obtain	Posters	30		30
information regarding	Word of mouth	15		15
the open day and the	School	55	not	55
Program?	Internet	0		0
Current means of	Library	45	applicable	45
obtaining information for	Magazines	40		40
research topics?	Internet	55		55
Computer access?	Yes	100	100	100
Internet connection?	Yes	65	84	75
How do you obtain	Surfing	25	52	39
information on a subject	Search engine	65	84	75
on Internet?	Trial & error	40	60	50
	Specific address	80	88	84
Purpose of Internet use?	General info seeking	70	48	59
	Specific info seeking	75	84	80
	Communication	60	48	54
	Surfing	55	52	54
leed for a web site for rogram?		90	100	95

5.3.6.1 <u>Interpretation of results from questionnaires 1 and 2</u>

The results of the questions displayed in Table 5.7 are addressed, interpreted and suitable comments are supplied.

The results revealed that all the respondents have access to a computer and that the majority has Internet connection.



With regard to the obtaining of information about the **Open** day and specifically about the **Program,** it was noted that none of the potential students found information via the Internet.

This fact indicates a definite need for information via the web, especially when taking into consideration that the majority has Internet access and that they have sufficient knowledge of the web. 95% of the total group agreed to the need of a web site. For optimal marketing of the **Program** the results gave a clear indication of the necessity of a web site, where interested parties can find information regarding the **Program** and related activities.

Another point of interest is that the majority of respondents use a search engine to locate information and an even larger majority uses specific addresses. Therefore the site has to be structured in the correct manner for successful engine searches, to ensure that the site serves as a functional marketing tool.

54% of the total group use the Internet for the purpose of communication. If they are supplied with specific facilities (bulletin board &listserv) to communicate with fellow students as well as lecturers, the researcher is convinced that this percentage will increase.

5.4 Discussion of relevant findings

In 5.3 the results of the complete evaluation questionnaire were discussed in general. Following is an exposition of the findings relevant to the design objectives that had to be met in order for the main question of this study to be answered. For the purpose of this discussion, the averages of the respondents are used. The detailed results are indicated in Table 5.6 and Table 5.7.

The design objectives are the following:

- Create a functional web site with sound design principles.
- Develop a site that is marketable.
- Establish a functional communication facility.
- Ensure that the site is a functional and workable product.

Following is a table for each design objective, containing relevant questions from the questionnaires as well as outcomes and comments.

5.4.1 Design objective 1

Create a functional web site with sound design principles.

Table 5.8 displays the questions from the evaluation questionnaire with relevant comments to indicate that the web site has been created with sound design principles.

Table 5.8 Questions and comments indicating that the web site has been created with sound design principles

Questions	Average % of respondents	Comments
Appearance of the web site/overall "look?	68	Even though 68% of the respondents agreed that the "look" of the site is good, the primary target group was not extremely impressed. An average of 53% of the target group felt that the site is good. Therefore adaptations to the overall look of the site is necessary. (Refer to Chapter 6 for recommendations)
2. The readability on the pages?	81	All the groups agreed that the readability of the site is very good. One expert indicated that the fonts could be smaller to limit scrolling.
Consistency of all elements in the site?	64	The students rated this aspect 56%, and the lecturers 50%. They complained about the arrow and top-link that did not appear on exactly the same place on each page.
4. Use of colour in the site?	71	The use of colour was rated satisfactory, but it is apparent from the comments that the students would have preferred more striking and funky colours.
8. Consistency of buttons in site?	84	All the groups rated the consistency of the buttons as good.
14. Presentation of content gains attention?	64	According to the students (only 32% rated it as good), the presentation does not gain the attention. No specific recommendation was made and the other groups found this issue above average and good.

5.4.2 Design objective 2

Develop a site that is marketable.

Table 5.9 displays the questions from the evaluation questionnaire with relevant comments to indicate that the web site is a potentially functional marketing tool.

Table 5.9 Questions and comments indicating that the web site is a functional marketing tool.

Questions	Average % of respondents	Comments
4. Use of colour in the site?	71	Even though the students did not completely agree with the colours used, the rest of the respondents approved and gave a definite indication that as a sample of the total WWW population, the colours would be effective for marketing purposes.
5. Choice of fonts?	72	The average received from the total group of respondents indicates that the choice of fonts will add to the positive marketability of the site.
6. Layout of the site map?	68	The students projected a negative attitude towards the layout of the site map but did not make any comment or recommendation. After interviewing a few from the target group, it became apparent that some of the links did not work and that the home button was not visible enough. The rest of the respondents complimented the map and found it satisfactory. The layout as it appears, will not have a negative impact on the marketability of the product
10.Navigation options clear and easy?	86	The global average from all the respondents indicate that the navigation options are good and will aid the marketability of the site.
11. Useful links page will attract visitors?	70	This page has the potential to be an extremely positive marketing tool, when active and used correctly. Some of the respondents did not understand the use of the page. (Refer to 5.3.4.1 for more detail.)

Relevant information obtained from questionnaire 1 (**Open** day) regarding the appropriateness of the site as a marketing tool is displayed in Table 5.10.

Table 5.10 Evaluation of information regarding the appropriateness of the site as a marketing tool.

Illarketii	9	Avorago 0/				
Questions	Variants	Average % of respondents	Comments			
Where did you obtain	Posters	30	Respondents obtained information			
information regarding the open day and the Program?	Word of mouth	15	regarding the open day by different means and because of the absence of			
	School	55	a web site, nobody could use the Internet for this purpose. The fact the all the respondents are computer -an Internet literate implies that they wou have consulted a web site if it existed (refer to Table 3.5)			
	Internet	0				
Current means of	Library	45	The averages to this question			
obtaining information for research topics?	Magazines	40	strengthen the argument in the			
	Internet	55	previous question. A web site for the "Program" will serve as a primary marketing tool.			

5.4.3 Design objective 3

Establish a functional communication facility

Table 5.11 displays the questions from the evaluation questionnaire with relevant comments to indicate that functional communication facilities have been established.

Table 5.11 Questions and comments indicating that a functional communication facility is established.

	Average %	
Questions	of respondents	Comments
6. Layout of the site map?	68	The web site should be the point of departure for any activity. Communication in this instance is seen as interacting with information. Communication can start at the site map, because from this point the user should be able to surf to any linked destination or mail/communication facility. The students found difficulty in doing that. Therefore the layout needs attention. (Refer to Chapter 6 for recommendations)
16.Enhance communication facilities?	83	Without a doubt the establishment of a web site will enhance communication.
17.Contact details are accessible and clear?	83	Necessary contact details are imperative. All the respondents agree that the given details are accessible and clear

Table 5.12 reveals relevant information obtained from questionnaire 1(**Open** day) and questionnaire 2 (Target analysis) indicating the validity for a functional communication facility.

Table 5.12 Questions and comments indicating the validity for a functional communication facility

Questions	Variants	Average% of respondents	Comments				
Computer access?	Yes	100	Although 25% of the target group mentioned in this question does not have				
Internet connection?	Yes	75	Internet connection, all of them have access to a computer. Getting connected is simple. The university supplies communication facilities, but a web site with communication facilities specifically for the "Program" would be the best option.				
How do you	Surfing	39	The group utilises the Internet and				
obtain	Search engine	75	resources available and by looking at the				
information	Trial & error	50	averages, it is clear that they use the most				
on a subject on Internet?	Specific address	84	productive ways. A web site would be beneficial for the students as well as interested and related parties for many different reasons.				
Purpose of Internet use?	General info seeking	59	At this stage only 54% of the respondents use the Internet for communication				
	Specific info seeking	80	purposes, but if they had facilities specifically for their use, they would utilise				
	Communication	54	it to a much greater extent. Seeking info				
	Surfing	54	can also be seen as a way of communicating; a way in which information is gathered.				
Need for a web site for Program?	Yes	95	This result indicates a real and concerning need for a proper web site, with all the necessary communication facilities, to ensure accessibility to all functions of the Internet and WWW.				

5.4.4 Design objective 4

Ensure that the site is a functional and workable product.

Table 5.13 displays the questions from the evaluation questionnaire with relevant comments to indicate that the final product is a functional and workable product.



Table 5.12 Questions and comments to verify that the final product is a functional and workable product.

Questions	Average % of respondents	Comments
2. The readability on the pages?	81	The response from all the groups indicated that the readability is good and this will add to the functionality and workability of the product.
3. Consistency of all elements in the site?	64	Even though the students and the lecturers were not completely satisfied with the consistency of the elements, the comments made were applicable to a few hyperlinks that will be moved to suit the abovementioned groups. These changes should satisfy them and add to the workability of the site.
5. Choice of fonts?	72	The positive average of the total group indicated that the choice of fonts is acceptable and that it should be an asset to the site.
6. Layout of the site map?	68	The students rated the layout of the site map below average. The rest of the groups were satisfied and rated it as good. As the students are the main users of the site, a few changes will be made to suit their needs. The above average rating indicates that the layout is satisfactory.
7. Navigation to /from homepage?	67	The lecturers had a problem with the navigation to and from the home page. The rest of the groups found it to be above average and good. A few changes are necessary to add to the functionality. (Refer to 5.3.4.1, for a detailed discussion)
9. Layout of site map for navigation?	71	The students found navigation from the site map difficult. The rest of the groups rated it good. Changes have to be made to accommodate the students. (Refer to 5.3.4.1, for more detail.)
10.Navigation options clear and easy?	86	All the respondents agreed that the navigation options are clear and easy to follow. This will add to the functionality and workability of the site.
11."Useful links" page will attract visitors?	70	During the testing phase the students and the experts did not clearly understand the use of the "Useful links" page, causing a low rating. The use was explained afterwards and that caused a change of opinion. The use of the page was explained to the CBT students and lecturers before they started the evaluation. Therefore their feedback was extremely positive. (Refer to 5.3.4.1, for more detail.)
12.Content in manageable chunks?	65	The ratings on this issue ranged from average to good. The content as it is presented, will provide a workable and functional site. A few respondents supplied comments, which will be taken into consideration during the refinement. (Refer to 5.3.4.1, for more detail.)

Table 5.12(continued)

Questions	Average % of respondents	Comments
15.Choice of graphics?	65	The students did not approve of all the graphics used, even though all the graphics were student work of work from the design-related field. The other groups found the graphics pleasing. This matter will not interfere with the workability of the site. The choices of students will be attended to in future (Refer to 5.3.4.1,for more detail.)
19.Download time of pages?	67	The download time of the site was rated from below average to good. The download times varied because some respondents used a stiffy during the test phase, while others used the Internet. Different size modems and networks were also used. Therefore the times differed and will remain to differ once the site is on the WWW.
20.The site is easy to use?	88	All the groups rated favourably on this matter and agreed that that the site is a functional and workable product.

5.4.5 Summary on the findings regarding the design objectives

A large number of students did not appear to see the evaluation as a serious matter. They did not take their time to look at the site intensively and did not bother to read instructions and especially highlighted comments. Therefore they misunderstood the purpose of some of the matters, such as the "Useful links" page. The testing phase was not a matter of importance to them, but unfortunately their comments and ratings have to be acknowledged..

The other groups, on the other hand, really made an effort to do the evaluation to the best of their ability.

The recommendations and conclusion will be addressed in Chapter 6.



CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

STATE OF THE PARTY OF	AND THE PERSON OF THE PERSON O	Page
6.1	Introduction	149
6.2.1	Objective 1: Create a functional web site with sound design	152
	principles	450
6.2.1.1	Section: Layout	153
6.2.1.2	Section: Navigation	154
6.2.1.3	Section: Content	155
6.2.1.4	Summary	156
6.2.2	Objective 2: Design a site that serves a an effective marketing tool	156
6.2.2.1	Section: Layout	157
6.2.2.2	Section: Navigation	158
6.2.2.3	Summary	158
6.2.3	Objective 3: Establish a functional communication facility	159
6.2.3.1	Section: Layout	160
6.2.3.2	Communication support and ease of use	161
6.2.3.3	Summary	161
6.2.4	Objective 4: Ensure that the site is a functional and workable product	161
6.2.4.1	Section: Layout	163
6.2.4.2	Section: Navigation	164
6.2.4.3	Section: Content	165
6.2.4.4	Section: Communication, support and ease of use	166
6.2.4.5	Summary	167
6.3	Final conclusions	168
6.3.1	Layout	169
6.3.2	Navigation	169
6.3.3	Content	170
6.3.4	Communication, support and ease of use	170
6.4	Limitations of this study	170
6.5	Recommendations for improvement of this product	171
6.6	General recommendations for similar development	174
6.7	In conclusion	175



CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

The findings in Chapter 5 indicate that the study succeeded in providing a sound understanding of how a web site should be developed to serve as an appropriate marketing tool and to provide functional communication channels.

An attempt was made to find solutions to the specific research problems, to gather relevant information by means of a literature research (Chapter two) and to develop a workable product by integrating the literature and the needs of the target population.

In this chapter the following are discussed:

- Conclusions.
- Functionality of the product.
- Limitations of the research.
- Recommendations for improvement of this product.
- Recommendations for future programs of this nature.

6.2 Conclusions

The main research question that had to be answered:

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

Following are the design objectives that had to be met in order for the main research question to be answered:

Create a functional web site with sound design principles.



- Design a site that serves as an effective marketing tool.
- Establish a functional communication facility.
- Ensure that the site is a functional and workable product.

In order to establish whether the design objectives had been complied to, the following sections of user interface were evaluated and analysed in Chapter 5 and the applicable sections below are discussed for each design objective:

- Layout.
- Navigation.
- Content.
- Communication and ease of use.

Table 6.1 displays the sections and the relevant questions from the different questionnaires, which had to be answered in order to establish the success of the design objectives and ultimately the success of the main research question. Conclusions and recommendations are based on the outcomes established in Chapter 5.



Table 6.1 Design objectives in relation to the sections and the applicable questions

Note: The different questionnaires are indicated as follows:

Q1 = Questionnaire 1 Q2 = Questionnaire 2 Q3 = Questionnaire 3

Objective	Sections of user interface and applicable questions from the applicable questionnaires					
	Layout	Navigation	Content	Communication		
Objective 1 Create a functional web site with sound design principles	(Q3:1) Appearance and overall look. (Q3: 2) Readability. (Q3:3) Consistency of all elements. (Q3:4)Use of colours.	(Q3:8) Consistency of buttons.	(Q3:14) Presentation of content is consistent.			
Objective 2 Develop a site that is marketable	(Q3:4)Use of colours. (Q3:5)Choice of fonts. (Q3:6) Layout of the site map.	(Q3:10)Different navigation options on site map clear & easy to use. (Q3: 11)"Useful links" page will attract visitors.	(Q1)Section 6 - Marketing. Refer to Table 5.9	(Q2:18)Way of obtaining specific information on the Internet. (Q2:20)Web site beneficial for marketing.		
Objective 3 Establish a functional communication facility	(Q3:6)Layout of site map.	(Q2)Section5 - Internet use.		(Q3:16)Establish functional communication facilities. (Q3:17)Contact details are clear. (Q2:21) Communication facility on the web site.		
Objective 4	(Q3:2) Readability. (Q3:3) Consistency of all elements. (Q3:5)Choice of fonts.	(Q3:7)Navigation to & from homepage. (Q3:9)Layout of site map for	(Q3: 15)Choice of graphics. (Q3:12)Amount of content in manageable	(Q3:19)Download time of pages. (Q3:20)Web site is easy to use. (Q3:17)Contact		
Ensure that the site is a functional and workable product	(Q3:6)Layout of site map.	navigation. (Q3:10)Different navigation options on site map clear & easy to use. (Q3:11)"Useful links" page will attract visitors.	chunks.	details are clear. (Q2:21) Communication facility on the web site.		



Table 6.2 displays a summary of the outcomes of **all** the findings in Chapter 5 and for the purpose of the conclusions and recommendations the average response of all the respondents is used. The specific questions dealing with each objective are taken from the summary in Table 6.2.

During the discussion that will follow the researcher will mention either negative or positive inputs and comments received from individual respondent groups where necessary.

Table 6.2 Summary of the outcomes of each respondent group

Issues	Students %	Lecturers %	CBT Students %	Experts %	Average of respondents
Layout of the web site					
1. overall look	56	50	77	87	68
2. readability	80	75	92	75	81
3. consistency	56	50	85	63	64
4. colour use	56	75	92	62	71
5. font choice	56	75	92	63	72
6. site map	40	75	92	63	68
Navigation					
7. homepage	68	50	85	63	67
8. buttons	60	100	100	75	84
9. site map	44	75	100	63	71
10. navigation options	68	100	100	75	86
11. useful links page	44	100	85	50	70
Content					
12. chunking	64	50	69	75	65
13. understandable	64	75	85	75	75
14. attention-gain	32	75	85	63	64
15. graphics	36	75	85	63	65
Communication, supp	ort and eas	e of use			
16. communication facilities	60	100	85	87	83
17. contact details	76	100	92	63	83
18. learning	36	75	77	63	63
19. download time	56	75	85	50	67
20. ease of use	88	100	100	63	88

6.2.1 Objective 1: Create a functional web site with sound design principles

"Line, shape, texture, balance, space, colour and text all play an equally important part in creating a visual message. It is important to use these elements in context with the subject matter." (Phillips, 1997:82)

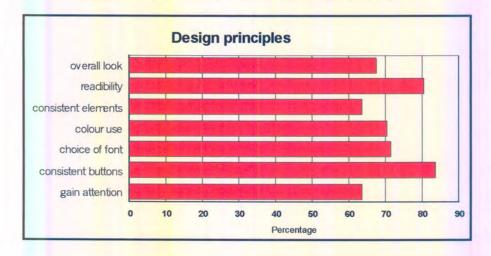
Table 6.3 reveals the average percentages allocated to each question relevant to Objective 1.

Table 6.3 Questions and average percentage of all respondents

Questionnaire	Questionnaire Question	
Q3:1	Appearance and overall look (Layout)	68
Q3:2	Readability (Layout)	81
Q3:3	Consistency of all elements (Layout)	64
Q3:4	Use of colours (Layout)	71
Q3:5	Choice of font. (Layout)	72
Q3:8	Consistency of buttons (Navigation)	84
Q3:14	Presentation of content gains attention (Content)	64

Figure 6.1 displays an overview of the question-percentage relation indicated in Table 6.3.

Figure 6.1 Evaluation of issues related to design principles





6.2.1.1 Section: Layout

The average response to the questions regarding the overall look of the web site, the readability of text, consistency of all the elements and the use of colour indicate that these elements were utilised appropriately and to the satisfaction of most of the groups.

The lecturers however rated the overall look as well as the consistency of the elements as average (50%). The reason for this rating can be attributed to the fact that two members from the group are involved in the other departments residing within the recently reconstructed faculty and are therefore not directly involved in the development of this product.

The primary target group, the enrolled students, did not approve of the look, which included the choice of colours, consistency of the elements and choice of font. The following comment was made:

" A more funky look with striking colours would have been acceptable."

The majority of the results and comments from the student group indicated that they were not satisfied with the aesthetics of the product. As their expectations were of an artistic and exciting nature, they would have preferred a more artistic and stimulating product. They also indicated that the layout did not support an attention gaining presentation, but no changes were made in this regard as all the other groups rated this issue as above average and good. They did apparently not take into consideration that the purpose of the site is to provide information.

Results from the experts and CBT students, who specialise in design principles, however indicated that the elements were applied successfully. Minor changes were suggested.

The following comments were made in this regard:

- "Fonts could be smaller to reduce scrolling."
- "A different font colour should be considered on the navigation bar to enhance the visibility."
- "Too much open space on the home page causes a dull and uninteresting opening page even though the choice of the graphic is good."
- "The leaf image structuring the content into chunks is too bulky; use a narrow straight line instead."



According to Reeves & Harmon (1994) creative designers sometimes violate screen design principles for effect. In the design of the web this concept was utilised in some instances such as the leaf image for chunking as well as scrolling of pages and the use of a relatively large font.

"Only 10% of users scroll beyond the information that is visible on the screen when a page comes up. All critical content and navigation options should be on the top part of the page." (Nielsen, 1996b).

Nielsen (1997) however indicated that users are more willing to scroll than they were during the earlier years of the Web, but still recommends that scrolling on navigation pages be limited. Therefore it was decided not to minimise the font. The favourable rating given to the readability also reinforced this decision.

The client preferred a narrow leaf image to a straight line.

The layout is accepted as successful in terms of the design principles and the overall percentage point of 72% obtained in this regard confirms this assertion.

6.2.1.2 Section: Navigation

The relevant question used for the evaluation regarding design principles was the issue relating to the consistency of buttons.

According to Lynch & Horton (1997) a user should never experience a lack of sense of where in the site he or she is. They promote clear, consistent icons and graphic identity schemes. A link to the home page or site map must appear on each page.

"Consistency is key to teaching users what the link colors mean. Links to pages that have not been seen by the user are blue; links to previously seen pages are purple or red. The ability to understand what links have been followed is one of the few navigational aids that is standard in most web browsers."(Nielsen, 1999b)

During the design and development stages the researcher went to great lengths to insure consistency of links and buttons. Therefore active links were applied according to the literature.



The overall group responded favourably with regards to this issue and a percentage of 84% was achieved.

The following comments were made:

- "The red arrow indicating the next page as well as the 'TOP'-button did not appear in exactly the same position on every page".
- "Consistency of the buttons is excellent! (CBT students and lecturers)".

The buttons concerned were adjusted as suggested.

6.2.1.3 Section: Content

Wilson (1999c) states that the purpose of a web site has to be clear and specific.

This site has to serve as a marketing tool. The purpose of this site on the other hand is to provide information regarding the **Program**. Attention gaining content in this context should thus be seen as all the relevant and appropriate information which is necessary to provide the user with a broad spectrum of knowledge about the **Program**.

According to the student group the content did not gain attention. They rated this issue as extremely poor (32%). Their expectations of the site were based on an interior design perspective, which was unmistakably evident from the comment: "I expected trendy ideas, design models and graphic examples from the industry."

As a result of their expectations, they did not approve of the graphics, which were student work as well as examples of previous projects provided by the client.

The other groups however, regarded the content as being useful and attention gaining. An overall percentage of 64% was obtained.

The following comments indicated a positive outcome regarding the content:

- "Presentation of the content is consistent and easy to follow."
- "The content is well organised and understandable."
- "Satisfactory information is supplied."
- "The content is not exciting, but satisfies the purpose."



As a result of the above-mentioned comments, the researcher decided to leave the content unchanged, but recommendations to accommodate the need of the students will be made.

6.2.1.4 <u>Summary</u>

The outcomes of the questions in Table 6.3 indicate that Objective 1 obtained an overall percentage of 72%, which indicates that the web site was created with sound design principles.

6.2.2 Objective 2: Design a site that serves as an effective marketing tool

According to Ellsworth & Ellsworth (1995:270) visibility of the web site can be obtained by cross-linking from another site to the home page. The site should provide links to other sites of interest, initiate curiosity and provide useful information.

Table 6.4 reveals the average percentages allocated to each question relevant to Objective 2.

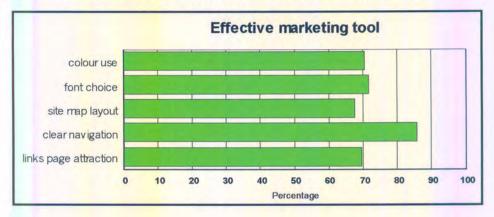
Table 6.4 Questions and average percentage of all respondents

Questionnaire	Question	Average %
Q3:4	Use of colours (Layout)	71
Q3:5	Choice of fonts (Layout)	72
Q3:6	Layout of the site map (Layout)	68
Q3:10	Navigation options on site map clear, easy to use (Navigation)	86
Q3:11	Useful links page will attract visitors (Navigation)	70

Figure 6.2 displays an overview of the question-percentage relation indicated in Table 6.4.



Figure 6.2 Evaluation of issues related to effective marketing



6.2.2.1 Section: Layout

For the evaluation of the site as an effective marketing tool, the input of the broader spectrum of respondents is of importance, because they represent a sample of the total WWW population. Therefore the rating by the students concerning the marketing aspects was not of prime importance.

The students rated the use of colour as average (56%), while the rest of the respondent group approved of the colours used. The colours as applied in the site will not have a negative effect on marketing; therefore the basic colour scheme will prevail. A colour enhancement regarding the home page will be recommended in order to satisfy a greater majority of the respondents.

The overall rating of the site map was above average (68%). The students reflected a negative attitude and rated the site map as poor but did not provide any suggestions or comments in this regard. This could have been as a result of links that did not work at the time of evaluation and a home button that was not visible at first sight. Nielsen (1999a) states that the navigation should be clear and understandable to avoid users getting lost.

The rest of the respondents approved of the site map. The links were rectified and the home button was placed in the centre of the page.

The following comments were received from the total group of respondents:

- "More exciting colours would have provided a funkier look" (Student).
- "The use of colour and fonts are applied well"(Lecturer).
- "I loved the choice of the colours, the graphics and the general layout" (Expert).



"The home page looks dull and uninteresting because of too much white space. The graphic used is appealing." (Expert).

6.2.2.2 Section: Navigation

"Don't assume that users know as much about your site as you do. They always have difficulty finding information, so they need support in the form of a strong sense of structure and place. Start the design with a good understanding of the structure of the information space and communicate this structure explicitly to the user. Provide a site map and let users know where they are and where they can go. (Nielsen, 1999a)

Navigation options were rated as excellent (86%) by the total group. Some of the links were not active and comments were made in this regard. The links were rectified.

From comments made about the 'links'-page the researcher realized that some of the respondents did not understand the purpose of the 'links' page and consequently rated it below average to poor. After an explanation they agreed that the page could be a valuable attribute.

The lecturers and CBT students agreed that the page has the potential to be an extremely positive marketing tool with all the links activated and used correctly.

The following comments were made:

- "Navigation options are clear, but some links are not active." (CBT student).
- "The 'links'-page is an excellent idea and will attract visitors" (Lecturer).
- "An easy ride through the pages." (CBT student).
- "Links' page a very good idea to get to the right people quickly" (Expert).

6.2.2.3 <u>Summary</u>

The use of colour throughout the site was accepted as satisfactory. The colours on the home page should be enhanced for a more striking effect.

The combination of the font choice, clarity of the navigation options, the 'links' page, the revised site map and overall use of colour resulted in providing a successful site for the purpose of serving as a functional marketing tool. A positive rating of 73% was obtained for Objective 2.



Information obtained from the questionnaire on the Open day (Appendix 1) confirms the need for a web site to serve as a tool for marketing purposes. The majority of the respondents agreed that they would have consulted a web site to obtain information about the Open day and the **Program**, had a site been available.

6.2.3 Objective 3: Establish a functional communication facility

E-mail, bulletin boards, listservs, teleconferencing, chat rooms and newsgroups are examples of types of communication and have become the primary means of communication among people on the Web. For communication from the program to the user the computer screen and how it is designed is of primary importance. Therefore the interface between the material and the user plays a significant role. (Allesi & Trollip, 2001:372; 423)

The outcomes of the questions asked in questionnaires 1 and 2 indicated a positive attitude regarding the validity for a functional communication facility. (Appendices 1 & 2)

All the students indicated that they have access to a computer, 75% of the group have direct access to the Internet, while the other 25% have the option to use the facilities of the university.

The majority use the Internet facilities for information seeking, communication and general surfing in the most productive ways. An average of 95% of the group indicated a definite need for a specific web site with communication facilities.

Table 6.5 reveals the average percentages allocated to each question from questionnaire 3 relevant to Objective 3. (Appendix 3)

Table 6.5 Evaluation of issues related to functional communication facilities

Questionnaire	Question	Average %
Q3:6	Layout of the site map (Layout)	68
Q3:16	Establish functional communication facilities (Communication)	83
Q2:17	Contact details are accessible and clear (Communication)	83



Figure 6.3 displays an overview of the question-percentage relation indicated in Table 6.5.

Functional communication facility

Site map layout

Enhance communication

Clear contact details

0 10 20 30 40 50 60 70 80 90

Percentage

Figure 6.3 Percentages of issues related to functional communication facilities

6.2.3.1 Section: Layout

Alessi & Trollip, (2001) state that the user interface plays a significant role in the communication between program and user. Therefore the researcher decided to highlight the layout of the site map as an example of functional user interface. This specific element was chosen because of the user interaction on the screen and the importance of well-structured navigation options.

Interactive communication from the site map should allow the user to go to any destination within the site and to any linked site.

"Make sure that all pages include a clear indication of what web site they belong to since users may access pages directly without coming in through your home page. For the same reason, every page should have a link up to your home page as well as some indication of where they fit within the structure of your information space." (Nielsen, 1999a)

Nielsen's comment is especially applicable when taking into consideration that communication has a direct impact on the marketing aspect connected to this site. Therefore the links on the site map in particular as well as all the links in the rest of the site should be 100% accurate and active.



The site map should be functional with all the links activated and the home button placed in the centre of the page.

6.2.3.2 Communication, support and ease of use

By means of e-mail and the other facilities person to person or person to group communication will be possible.

The student group viewed the site from a stiffy. Therefore any link to another site as well as the communication facilities could not be utilised and evaluated properly. The other groups (experts and CBT students) evaluated the site on the Web and could therefore give a more valuable input on the functionality.

All the respondents however, rated the provision of communication facilities as either good or excellent and agreed that the web site with the communication facilities as provided currently, would be of great value once the site is in use.

6.2.3.3 <u>Summary</u>

Objective 3 was rated good with an average of 78%. The following overall ratings were given to the elements used in the evaluation of this objective:

Layout of the site map 71%

Functional communication facilities 83%

Contact details 83%

The outcomes of the ratings provided a positive indication that functional communication was established.

6.2.4 Objective 4: Ensure that the site is a functional and workable product

This objective encompasses the other 3 objectives, because for this site to be functional and workable the following issues have to be successfully dealt with:

- sound design principles,
- basic characteristics of a site serving as a marketing tool; and
- functional communication.



Therefore many of the questions are also applicable in coming to a conclusion regarding this objective. The matters that have been dealt with during the previous discussions are regarded as conclusions applicable to this objective as well, except if viewed from another perspective.

The researcher aimed to create a site to fulfil many needs and satisfy the total respondent group but also kept in mind that the success of the site as a marketing tool depends on the broader WWW population. Therefore it was important to refer to the literature regularly, especially regarding layout, design principles and sound navigation structures.

Misanchuk, (1992:167) states that the most universal examples of good layout tend to be simple and maintain a delicate balance between unity and diversity.

"A button bar with all the different choices, at the bottom of each page provide a consistent graphic identity " (Lynch & Horton, 1997)

Table 6.6 reveals the average percentages allocated to each question relevant to Objective 4.

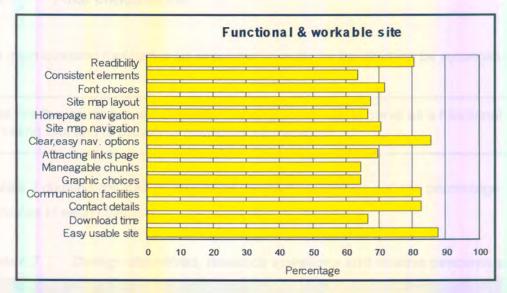
Table 6.6 Evaluation of issues related to the functionality and workability of the site

Questionnaire, question nr.	Question			
Q3: 2	Readability on the pages (Layout)	81		
Q3: 3	Consistency of elements in the site (Layout)	64		
Q3: 5	Choice of fonts (Layout)	72		
Q3: 6	Layout of site map (Layout)	68		
Q3: 7	Navigation to and from the home page (Navigation)	67		
Q3: 9	Layout of site map for navigation (Navigation)	71		
Q3:10	Navigation options clear and easy (Navigation)	86		
Q3:11	Useful links page will attract visitors (Navigation)	70		
Q3:12	Content in manageable chunks (Content)	65		
Q3:15	Choice of graphics (Content)	65		
Q3:16	Communication facilities (Communication, support)	83		
Q3:17	Contact details (Communication, support)	83		
Q3:19	Download time of pages (Communication, support)	67		
Q3:20	Site is easy to use (Communication, support)	88		



Figure 6.4 displays an overview of the question-percentage relation indicated in Table 6.6.

Figure 6.4 Evaluation of issues related to functionality and workability of the web site



6.2.4.1 Section: Layout

The average percentage of the overall rating regarding the layout of the site was 71%, which implies an above average outcome. The readability as well as the choice of fonts was not changed, as the response from the overall respondent group was satisfactory.

Although the students indicated that a more exciting choice of font or fonts would have been preferred, the researcher decided to turn to the literature in this regard. Schwier & Misanchuk, (1993:241) suggest that not more than two different fonts should be applied and also indicate that a good writing style dictates the use of plain text. Unusual type styles should also be limited.

With the necessary changes to the site map and the consistency of the elements in the site as discussed in 6.2.1 these elements should be satisfactory and should add to the general workability of the site.

The following comments were made regarding the layout:

- "I would have liked a menu list on the home page" (Expert)
- "A number of different fonts should have been applied" (Student)

Chapter 6 - Conclusions and recommendations



- "The graphic on the home page is good, but the layout is dull and uninteresting."
 (Expert)
- "Layout of site map is good; the colour of text against the background should be more visible."(Expert)

6.2.4.2 Section: Navigation

Navigation elements give a program structure and provide the user with some control over events. Well-contrived and properly executed, navigation and management features serve to enhance the activity and make the interactive multimedia treatment easy to use, but if not, they can be a nightmare for the user. (Schwier & Misanchuk, 1993:173)

The following comments were made:

- "Navigation to and from the home page should be more prominent." (Lecturer)
- "Navigation throughout the site is excellent, apart from the links that are not active."
 (CBT student)
- "Even 'newbies' would be able to navigate their way through the pages." (Expert)
- "Some of the pages could not be accessed, especially from the site map." (Expert)

Proper workability of the site requires a navigation structure without any flaws, therefore alterations were made to the following elements:

- All the broken links to and from the homepage, as well as throughout the site, were rectified.
- The navigation bars and buttons (e.g. the home button) were placed in more visible positions.
- The navigation bar on the home page was placed in a position to ensure that not scrolling is necessary.
- The home button on the site map was placed in the centre of the screen.

The students and the experts misunderstood the purpose of the "Links" page. It was apparent that they did not read the note supplied on the screen. After an explanation to the students and individual experts who commented on this issue, they all agreed that the page would actually add to the attraction of visitors to the site, when applied correctly.



6.2.4.3 Section: Content

"Every multimedia project includes content. It is the "stuff" from which you fashion your messages. It is also the information and material that forms the heart of your project - that defines what your project is about. Practically content can be any and all of the elements of multimedia." (Vaughan, 1998:524)

The researcher was faced with a predicament regarding the content because the client supplied the text as well as graphics. The researcher was only able to manipulate the content by means of layout and screen design.

The average rating received from the total respondent group regarding the chunking of the content was above average (65%). The lecturers rated it at 50%, which caused concern. The following comments were made in this regard:

- "Chunking of content can be optimised" (CBT student, lecturer)
- "Some pages too long, split up to prevent scrolling." (Expert, lecturer)

This issue was discussed with the client and to solve the problem, some pages were split up to provide more manageable pieces of text and the leaf image was applied in another instances.

The students did not approve of the choice of the graphics at all, but as the client provided the graphics, no changes were made in this regard. Only one respondent (expert) commented on the size of the graphics and suggested that they could be smaller for less emphasis.

Schwier & Misanchuk, (1993:215) state that for every graphic object on the screen (including blocks of text) there is one or more visually complimentary objects. Balance provides a feeling of stability and a screen should not give the impression that it is tipping over to one side. Therefore the researcher decided not to make any alterations regarding the graphics used. This decision was strengthened by the fact that the rest of the respondents indicated that they were satisfied with the graphics, and that it added to the value of the site.



Some of the comments that were made:

- "The content is not exciting" (Students)
- "The content serves the purpose and is presented effectively." (Lecturer)
- "The content will gain attention of interested visitors coming to the site for a specific purpose." (CBT student)
- "Good chunking added to the friendliness and informative possibilities of the site. (Expert)
- "I loved the choice of the graphics." (CBT student)
- "The graphics add to the value and interest of the site. Good work!" (Expert)

6.2.4.4 Section: Communication, support and ease of use

Good communication is the backbone of functional marketing. For this site to serve as a marketing tool for the **Program**, communication facilities have to exist and they have to be connected correctly. During the testing phase the students and most of the lecturers viewed the site from a stiffy or the hard drive of the PC. They were informed that the links to the different communication facilities were not active.

The overall rating for the need of functional communication facilities was excellent (83%), which indicated that the total group was satisfied with the following proposed facilities:

- E-mail.
- Listserv.
- Bulletin board.

The communication facilities as mentioned above will remain unchanged.

For the site to serve as a marketing tool the following indirect communication channels also have to be in place:

- Active links to sites related to the industry.
- Active links to move back and forth within this site.
- The "Useful links" page with active links to the different sites of interest.

The contact details were rated as excellent (83%) and each individual group indicated their satisfaction regarding this issue. All the respondents indicated that the site is easy to use. The positive comments and the excellent rating (88%) are clear-cut proof thereof.



The only matter of concern regarding this objective is the download time. The rating varied from below average to good, the reason being that some respondents viewed the site from a stiffy and others from the Web. Different sized modems and networks were used. Download times on the Web will always vary because of various reasons such as modem size, time of downloading (midday or midnight).

During the design of the site, the researcher specifically ensured that the size of the graphics did not exceed 50K. The site was specifically designed to accommodate users with older hardware and modems. Literature advises that download time should not exceed 10 seconds. (Lynch & Horton, 1997). The overall rating was above average (67%), which the researcher accepted as satisfactory. Therefore no changes were made in this regard.

The following comments were made:

- "The site is easy to use" (Student, CBT student, lecturer)
- "The bulletin board and listserv are good ideas." (Student, expert)
- "The individual pages were easy to understand and even "newbies" would be able to negotiate their way through the pages." (Expert)
- "I admired the fact that only the necessary information is included to make the site useful and easy to understand." (Expert)

The outcome of communication, support and ease was excellent (80%). Therefore no changes are indicated.

6.2.4.5 Summary

The primary purpose of this Web site is to serve as a marketing tool and provide functional, internal as well as external communication channels, especially with regard to marketing matters.

The issues regarding the general layout, navigation options, relevant content matters, communication and ease of use were all successfully dealt with. The average rating obtained from the relevant questions involved was good (75%), which implied a workable and functional site

6.3 Final conclusions

The main question that had to be answered in order for the study to be successful 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 6.7 displays the design objectives, research questions and the percentage outcomes of each objective.

Table 6.7 Design objectives, research questions and relative percentages

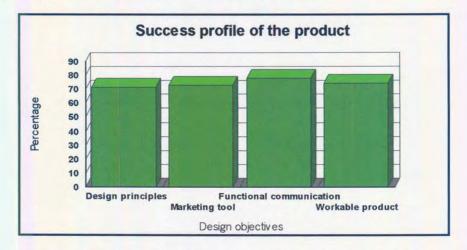
Design objective	Sub question	%	Comments	
Create a functional web site with sound design principles.	What methods should be applied to ensure the effectiveness of the site?	72	Successfully answered.	
Develop a site to serve as a functional marketing tool.	What methods should be applied for creating a site to serve as a functional marketing tool?	73	Successfully answered.	
Establish functional communication facilities.	How can efficient and effective communication be obtained?	78	Successfully answered.	
4. Ensure that the site is a functional and workable product.	How can functionality and sustainability be ensured?	75	Successfully answered.	

The outcomes of the different design objectives portray a picture of a successful study where all the relevant sub-questions were successfully answered. The overall rating for the success of the total site as derived from the percentages in Table 6.7, is 75%.

Figure 6.5 graphically displays the total success of the product as summarised in Table 6.7.



Figure 6.5 Success profile of the final product



From the positive outcomes of all the design objectives it would be safe to say that the main question was successfully answered

The following comments are an indication of the success of the site:

- "I admired the fact that only necessary information is included to make the site useful and easy to understand" (Expert)
- "Impressive site" (Expert)
- "The site has a good look and feel" (CBT student)
- "The site has a professional look" (Expert)

Elements that caused concern during the evaluation were rectified or changed. A brief discussion of each section follows:

6.3.1 Layout

- The menu bar that was only visible on some monitors after scrolling, was placed in a more visible position.
- Consistency of the elements:

The arrow and 'TOP'- links were placed on the same position on every page.

The site map was readjusted to ensure that the whole site map is visible on the screen, without any unnecessary scrolling.

6.3.2 Navigation

All the broken and misleading links were rectified throughout the site.



- Useful "Links"-page: The notice, explaining the purpose of the page was highlighted. The researcher decided not to change all the fictitious logos to the same size, because the logos of the different companies that will appear on the page in future, will differ in size, shape and colour.
- The faulty links on the site map were activated and the home button was placed in the centre of the page.

6.3.3 Content

- Some of the text was split up into two pages to limit the amount of scrolling.
- The leaf image was used to optimise the chunking of text and the image was minimised.

6.3.4 Communication, support and ease of use

 No major issues of concern were raised; therefore no changes were made to any of these elements.

6.4 Limitations of this study

The following limitations were experienced during the course of his study:

- The client involvement was not sufficient (as a result of external circumstances), no specific instructions were given and the researchers worked on different guidelines and ideas. Therefore time was wasted on redesigning and unnecessary changes. The home page for instance, was redesigned four times and, in desperation, the last attempt, which was not the best one, was on.
- The home page determined the style, colour scheme and layout of the rest of the site. Had any of the previous attempts been chosen, the site would have had a different overall look, which the students most probably would have preferred.
- The client supplied all the content (text and graphics) and the researchers had to structure the layout accordingly.
- As a result of the restructuring of the whole faculty, the original ideas changed drastically. The Program now resides under the School of the Built Environment. It is possible that the web site will have to change to suit the uniform idea of the new structure.
- Initially Microsoft FrontPage98 was used as the authoring tool and much time was spent on getting to know the tool. Thereafter the researchers decided to change to Dreamweaver2 because of the reasons stated in 3.5.3.



During the evaluation phase the students had a very indifferent attitude. This resulted in unsatisfactory results from the group. Unfortunately the venues for student evaluation differed. Some students had to evaluate the site on a stiffy and others on the hard drive of a PC.

No proper evaluation of the communication facilities was possible, because Internet connection was not available. Fortunately all of them had knowledge of all the proposed communication facilities and could therefore answer the questions satisfactorily.

6.5 Recommendations for improvement of this product

Recommendations derived from the results and conclusions from this study are summarised under the different design objectives and displayed in Table 6.8.



Table 6.8 Design objectives and relevant recommendations

Design objective	Recommendation	Comments
	-Include the use of 3-D objects in 3-D space.	-Create an atmosphere of reality. (Simulation)
Create a functional web site with sound	-Use thumbnails to represent images that are too large to download.	-Use relevance-enhances image reduction.
design principles.	-Apply more colour coding to the site map in order to make it more understandable.	-Instead of just having the top of each section the same as the relevant topic page, colour the total column relevant to the topic or section.
	-Optimise the "What's new" page with daily or weekly updates.	All events in the Program as well as the design industry should be places and regularly updated.
	-Generate reciprocal links from active and important sites relevant to the industry.	-Links to and from other design departments within the academic environment, locally as well as internationally as well as links to and from affiliated institutions, would gain visibility.
2. Develop a site to	-Include active use of CD-ROM.	-CDs can be distributed to potential students and companies in the design industry.
serve as a functional marketing tool.	-Consider a newsletter.	 -A monthly or biannual newsletter to interested parties affiliates of the Program and other academic institutions.
	-Publish an article regarding the Program and the new site in an accredited magazine.	-A positive mention in an article could result in many visits and would be beneficial for the visibility of the Program , especially since the whole 'face' has changed.
	-Include animation to gain attention.	-Use has to be functional. Check the download time.



Table 6.8 (continued)

Design objective	Recommendation	Comments
	-Establish listservs and bulletin boards for each level of study, the FTR Lab, Virtual Workshop and other independent groups.	-This type of service will allow discussions and spontaneous interaction within the closed group and could add to productivity and can be a timesaving experience.
	-Include more interactivity.	 -Link graphics to a screen where the graphic or something relevant is explained.
Establish functional communication	-Consult with UP webmaster to enquire whether a link from the site to the application \ enrolment forms would be possible.	It would be beneficial if the student could go from this site directly to the application form to register for a course.
facilities.	-Provide a facility where the user can interact, e.g. FAQ.	-Questions regarding the Program could be answered by e-mail and/or placed on a specifically allocated bulletin board for all interested parties to read.
	-Consider private chat rooms, audio-or video teleconferencing. (Refer to 2.4.5, 2.4.6, 2.4.7)	-Specific users e.g. members in the design industry may have discussions while working on a specific project.
	-Virtual reality.	-Powerful medium for the exchange of information.
	-Use scrolling when really necessary for a specific topic.	-Most important information on the first screen.
	-Consult with the client regarding simplifying the text.	-Informal text would create a friendlier atmosphere.
4. Ensure that the site is a functional and workable product.	-Administer a survey amongst the student population to verify exactly what they would like on the site and provide a separate section within the site to accommodate them if deemed necessary.	- The survey could provide valuable information as to the likes and dislikes of the students. A separate section would most probably satisfy their needs. Select a student to administer this section.
	-Allocate a webmaster and insure that the site stays up to date. Include an e-mail address of this person to allow for questions and enquiries.	 Always stay a step ahead. No outdated information should ever appear on a site. Keep the site interesting and create curiosity where possible. If no pages exist create them!
	-Optimise the use of graphics	-Link the graphic to a following screen where a detailed explanation is given, motion is implemented when the mouse moves over a particular section etc.



6.6 General recommendations for similar development

This study provides ample opportunities for further research regarding the optimising of a web site as a marketing tool, as well as the functional use of different communication facilities. The web site, as a product of this research provides the basic structure for the needs and requirements of an academic institution.

The recommendations as summarised in Table 6.8 can also be taken into consideration for proposed similar development.

Should this web site have to be changed or reconstructed to suit the needs of the School of the Built Environment, all the groundwork for such a development is in place. A relevant literature study has been conducted, the target groups have been analysed and identified, appropriate design principles have been documented and problem areas have been identified.

With regard to the enhancement of a web site as a powerful marketing tool, the following are applicable:

- Virtual reality interface: "This is a complete environment in which the user physically enters and interacts with the program for example, if you were learning about landscape design you might walk around in the area to be designed. You could pick up shrubs and plant them in various locations, install lights and construct water features. The user must be able to use senses to operate in a virtual world." (Schwier & Misanchuk, 1993:126)
- Functional use of pictures and other graphics can add to a much more memorable visit to a web site.
- Carefully applied motion (animation) could attract visitors, but Nielsen, (1999a) insists on not including page elements that move incessantly, because of the overpowering effect on the human peripheral vision.
- The addition of sound for a specific functional purpose could add to the value of he site.
- A good way of getting visitors to return to a site is by offering a database (collection of information) either of general interest or related to the area of business.
 (Ellsworth & Ellsworth, 1995:225:236)
- Request a visitor to bookmark the site in order to revisit the site.



 Place the URL on stationary and corporate literature and promote the site by means of the traditional media.

6.7 In conclusion

From this study it is evident that the creation of a successful marketing and communications website can be fraught with problems should some basic rules not be followed. These rules largely relate to the usability and navigational ease of the site and the relevance of the contents to the target user. Elements such as design and layout, consistency of presentation and communication facilities are all supporting features to these main critical success factors. Over time, the importance of these elements will most probably shift. That is, communication facilities, functionality and content will gain prominence in terms of the importance of building and maintaining a sustainable marketing site.

Most important remains an open view on how the objectives of a site relate to the needs and the usability requirements of its target audience.



References

Alessi, S.M. & Trollip, S.R. (2001). <u>Multimedia for Learning</u>: <u>Methods and Development</u>. 3rd Ed. Massachusetts: A Pearson Education Company.

Alessi, S.M. & Trollip, S.R. (1991). <u>Computer-Based Instruction. Methods and Development.</u> 2nd Ed. New Jersey: Prentice Hall.

Baroudi, C. & Levine, J. R. (1995). <u>Internet Secrets. Info World</u>. Foster City, California: IDG Books Worldwide Inc.

Bennet, R., Watson, M. J., Smuts, D. (2000). Web Weavers. SA Computer Magazine, Vol. 8, October: 39-40.

Brian, M. (2001a). How Web Pages Work. [On-line]

Available: http://www.howstuffworks.com/web-page.htm. [Accessed on 5/6/01]

Brian, M. (2001b). How Web Servers and the Internet Work. [On-line]

Available: http://www.howstuffworks.com/web-server.htm. [Accessed on 5/6/01]

Brian, M. (2001c). Promoting your Site. [On-line]

Available: http://www.howstuffworks.com/web-page.htm [Accessed on 17/07/01]

Bruemmer, P. J. (2000). The Directory Listing Advantage. [On-line] Available: http://www.clickz.com/cgi-bin/gt/article.html?article=2192 [Accessed on 10/04/01]

Carroll J. M. & Rosson, M. B. (1985). <u>Usability specifications as a tool in iterative</u> <u>development.</u> In Hartson, H. Rex (Editor), *Advances in Human- Computer Interaction 1*, Ablex, Norwood, NJ

Cilliers, W. J. (1999). <u>Dissertation and Thesis Support. Module 1: A guideline to writing research project</u>. [Unpublished]

Clarke, P. (1998). <u>Telematic teaching of adults via the World Wide Web: a university case study.</u> Pretoria: [s.n]

Coetzee, H. (2000). <u>The development of a World Wide Web information resource for farmers with specific reference to yoghurt production</u>. [Unpublished]

Crawford, S. (2000). Focus Pocus: The Promise of Portals. [On-line]

Available: http://tcai.com [Accessed on 10/3/00]

Creating a Web Presence. 2000. [On-line]

Available: http://knowledgeway.org/living/create-web/homepage.html

[Accessed on 04/03/01]

Directory. (2001) [On-line]

Available: http://www.webopedia.com/TERM/d/directory.html [Accessed on 10/04/01]

Domain Name System, (2001) [On line]



Available: http://www.internic.net/fags/autoritative-dns.html [Accessed on 28/07/01]

Dove, N. (2000). Content is King. .net. Issue 32. April: 37.

Dreamweaver Information. (1999) [On line].

Available: http://www.macromedia.com/software/dreamweaver

[Accessed on 14/04/01]

Ellsworth, J. H & Ellsworth, M, V. (1995). <u>Marketing on the Internet: Multimedia strategies for the World Wide Web.</u> New York: John Wiley &Sons, Inc

Fardouly, N. (1997). Principles of Instructional Design and Adult Learning: Instructional Design of Learning Materials. [On-line]

Available: http://www.fbe.unsw.edu.au/learning/instructionaldesign/materials.htm [Accessed on 30/03/00]

Franklin, Curt. (2001). How Internet Search Engines Work. [On-line]

Available: http://www.howstuffworks.com/web-page.htm. [Accessed on 17/07/01]

FrontPage Information. (2000). [On-line].

Available: http://www.microsoft.com/catalog/ [Accessed on 14/04/01]

Hannafin, M.J. & Hooper, S. (1989). An integrated framework for CBI screen design and layout. Computers in Human Behaviour.

Hannafin, M. J. & Peck, K. L. (1988). <u>The Design, Development and Evaluation of Instructional Software</u>. New York: Macmillan Publishing Company.

Hippleheuser, Alan L. (1999). Secrets of Web Marketing Revealed. The Newbie Guide on how to start Marketing Successfully. [On-line]

Available: http://www.skiestheweb.com/specialreport.html. [Accessed on 22/03/00]

Hodge, K. (2000). Web Tech: Dreamweaver 3. .net, Issue 34, June:72-73

Hodge, K. (2000). Dreamweaver 1.2. .net, Issue 32, April: 74-76

Hodgkinson, C. & Cronje, J. (1999). <u>Designing Effective Technology-Assisted Learning Materials</u>. [Unpublished]

Internet Software Consortium. (2001). Network Wizards. [On-line] Available: http://www.isc.org [Accessed on 14/5/01]

Kahn, B. H. (1997). <u>Web-based Instruction</u>. Englewood Cliffs, New Jersey: Educational Technology Publications.

Kennedy, A. J. (1997). <u>The Internet and World Wide Web. The Rough Guide</u>. London: Penguin Books Ltd.

Krause, K. K. (2000a). How to write Meta tags. [On-line]
Available: http://www.cre8pc.com/howtometa.html. [Accessed on 1/09/00]

Krause, K. K. (2000b). Web Promotion Checklist [On-line]

Available: http://www.cre8pc.com/checklist.html. [Accessed on 1/09/00]



Krause, K. K. (2000c) Link Popularity. [On-line]

Available: http://www.cre8pc.com/howtolink.html [Accessed on 11/09/00]

Lynch, J. (1998). Web Portals. [On-line]

Available: http://www.pcmag.com [Accessed on14/08/00]

Lynch, P. J. & Horton, S. (1997). Yale C/AIM Web Style Guide. [On-line]

Available: http://info.med.yale.edu/caim/manual/index.htm [Accessed on 23/09/99]

Marketing on the Internet. (2000) [Online].

Available: http://knowledgeway.org/living/online marketing.html. [Accessed on 23/03/00]

Melzer, C. (1999). Enterprise Information Portals. [On-line]

Available: http://general.rau.ac.za/infosci/RAUjournal/default.asp?to=webs.

[Accessed on 13/06/00]

Microsoft FrontPage Editor. (2000) [Online]

Available: http://docs.rinet.ru:8080/DIIS/imp09fi.htm#I49 [Accessed on 04/04/01]

Misanchuk, E R. (1992). <u>Preparing Instructional Text. Document Design Using Desktop Publishing</u>. Englewood Cliffs, New Jersey: Educational Technology Publications, Inc.

Mouton, J. & Marais, H.C. (1996). <u>Basic concepts in the Methodology of the Social Sciences</u>. Pretoria: HSRC Publishers.

Multimedia. (1999) [On-line].

Available: http://ai.encyclopedia.com [Accessed on 26/05/01]

Multimedia. (2000) [On line]

Available: http://aj.encyclopedia.com/articlesnew/08852.html

[Accessed on 4/05/01]

Nielsen, J. (1995). Multimedia Guidelines on the Web. [On line]

Available: http://www.useit.com/alertbox/9512.htm [Accessed on22/03/00]

Nielsen, J. (1996a). Top Ten Mistakes in Web Design. [On-line] Available: http://useit.co/alertbox/9605.html. [Accessed on 28/04/01]

Nielsen, J. (1996b). Marginalia of Web design. [On line]

Available: http://www.useit.com/alertbox/9611.html [Accessed on 8/09/99]

Nielsen, J. (1997). Changes in Web usability since 1994. [On-line]

Available: http://www.useit.com/alertbox79712a.html. [Accessed on 30/04/01]

Nielsen, J. (1998). Nielsen's Law of Internet Bandwidth. [On line]

Available: http://www.useit.com/alertbox/980405.html. [Accessed on 30/04/01]

Nielsen, J. (1999a). Top Ten Mistakes in Web Design. [On-line]

Available: http://useit.com/alertbox/9605.html. [Accessed on 28/04/01]

Nielsen, J. (1999b). Stuck with old browsers until 2003. [On-line]

Available: http://www.useit.com/alertbox/990418.html. [Accessed on 18/04/01]



Patterson, M.C. (1997). <u>Doing Business on the World Wide Web</u>. Menlo Park, CA: Crisp Publications, Inc.

Petersen, M. G. (1998). Towards usability evaluation of multimedia applications. Crossroads- the ACM's first electronic publication. [On-line] Available: http://www.acm.org/crossroads/xrds4-4/usability.htm [Accessed on 20/02/01]

Phillips, R. (1997). <u>The Developer's Handbook to Interactive Multimedia</u>. London: Kogan Page Limited.

Reeves, T.C. (1994). Evaluation Toolkit. [On-line] Available: http://mime1.marc.gatech.edu/mm Tools/evaluation.html. [Accessed on 18/04/99]

Sachs, D. & Stair, H. H. (1997). <u>The seven keys to effective web sites</u>. New Jersey: Prentice Hall, Inc.

Shneiderman, B. (1998). 3rd Ed. <u>Designing the User Interface: Strategies for Effective Human-Computer-Interaction</u>. U.S.A.: Addison-Wesley Longman, Inc.

Schwier, R. A. & Misanchuk, E. R. (1993). <u>Interactive Multimedia Instruction</u>. Englewood Cliffs, New Jersey: Educational Technology Publications.

Strategic Research Themes. (2001) [On-line]
Available: http://www.unb.ca/ric/research.html#Themes [Accessed on 24/04/01]

Tips for writing your Cyber Marketing Plan. (2000) [On-line] Available: http://www.successful.com/plantips.html. [Accessed on 13/3/00]

Treuhaft, J. (1995). Multimedia Design Considerations._ [On-line] Available: http://www.algonquinc.on.ca/edtech/mmdesign.html#busy1 [Accessed on 19/10/00]

Trochim, W. (1999). The Research Knowledge Base, 2nd Ed. Cornell University, Ithaca, New York: Cornell Custom Publishing. [On-line]

Available: http://trochim.human.cornell.edu/kb/index.htm [Accessed on 11/03/99]

Tyson, J. (2001). How Instant Messaging Works. [On-line] Available: http://www.howstuffworks.com/instant-messaging1.htm [Accessed on 24/06/01]

Vacca, J. (1996). 1st. Ed. <u>Virtual Reality; Strategies for Intranet and World Wide Web Applications.</u> Charleston, South Carolina, U.S.A.: Computer Technology Research Corp.

Van Dyk, P. S., Nel, P. S. & Loedolff, P.V.Z. (1992). <u>Training Management: A multi-disciplinary approach to human resources development in Southern Africa</u>. Halfway House: Southern Book Publishers.

Vaughan, T. (1998). <u>Multimedia: Making it work</u>. 4th Ed. Berkley, CA: Osborne/McGraw-Hill.

Web Course Evaluation Checklist. (2000). [On-line] Available: http://iitclass.bloomu.edu/webeval/Summary.htm [Accessed on 07/09/00]



West, S. (1987). <u>Design for Desktop Publishing.</u> In The Waite Group (J. Stockford,Ed.), Desktop publishing bible. Indianapolis, IN: Howard W. Sams.

Willis, B. (1995). Distance Education and the WWW. Guide#12. [On-line] Available: http://www.uidaho.edu/evo/dist12.htm. [Accessed on 23/06/01]

Wilson, R. F. (1996a). What is the purpose of your web site? [On-line] Available: http://www.wilsonweb.com/articles/web-purp.htm [Accessed on 19/08/00]

Wilson, R. F. (1996b). Why in the world would anyone come to visit your web site? [Online] Available: http://www.wilsonweb.com/why-come.htm [Accessed on 14/08/00]

Wilson, R. F. (1996c). Multiple doors of entry. [On-line]
Available: http://wilsonweb.com/articles/wht-come.htm [Accessed on 14/08/00]

Wilson, R. F. (1996d). The link site web marketing strategy. [On-line] Available: http://www.wilsonweb.com/articles/linkmrkt.htm. [Accessed on 20/06/00]

Wilson, R. F. (1997a). Increasing visitor flow to a sluggish web site. [On-line] Available: http://www.wilsonweb.com/articles/visitor-flow.htm. [Accessed on 22/06/00]

Wilson, R. F. (1997b). Increase your web traffic in a weekend. [On-line] Available: http://www.wilsonweb.com/reviews/increase-web-traffic.htm [Accessed on 22/06/00]

Wilson, R. F. (1998a). Multiplied marketing on the web. [On-line] Available: http://www.wilsonweb.com/articles/multiplied.htm. [Accessed on 26/06/00]

Wilson, R. F. (1998b). How to develop an e-mail newsletter. [Online] Available: http://www.wilsonweb.com/articles/newsletter.htm. [Accessed on 26/06/00]

Wilson, R. F. (1998c). Collecting and using data from your web site visitors. [On-line] Available: http://www.wilsonweb.com/articles/data-collect.htm. [Accessed on 04/07/00]

Wilson, R. F. (1998d). Search engine positioning. [On-line] Available: http://www.wilsonweb.com/wmt3/issue49.htm. [Accessed on 28/06/00]

Wilson, R. F. (1998e). Marketing on a slim budget. [On-line] Available: http://www.wilsonweb.com/wmt4/issues/issue50.htm [Accessed on 8/07/00]

Wilson, R. F. (1999a). Gateway pages and how to make them. [On-line] Available: http://www.wilsonweb.com/articles/gateway.htm. [Accessed on 03/04/01]

Wilson, R. F. (1999b). Questions small businesses ask about the Internet. [On-line] Available: http://www.wilsonweb.com/articles/sb-quest.htm. [Accessed on 14/02/00]

Wilson, R. F. (1999c). The five mutable laws of web marketing. [On-line] Available: http://www/wilsonweb.com/wmta/basic-principles.htm. [Accessed on 23/02/00]



Wilson, R. F. (1999d). How to select a good domain name or two. [On-line] Available: http://www.wilsonweb.com/wmta/domain-name.htm. [Accessed on 09/09/01]

Wilson, R. F. (1999e). The web marketing checklist: 27 ways to promote your site. [On-

line]

Available: http://wilsonweb.com/articles/checklist.htm. [Accessed on 24.02/00]

Wilson, R. F. (1999f). Developing advertising revenue from your site. [On-line] Available: http://www.wilsonweb.com/wmta/issue60.htm. [Accessed on 23/02/00]

Wilson, R. F. (2000a). How to segment your Internet market. [On-line] Available: http://www.wilsonweb.com/wmt5/market-segments.htm. [Accessed on 18/5/01]

Wilson, R. F. (2000b). Links. [On-line]

Available: http://www.wilsonweb.com/articles/navigation.htm.

[Accessed on 31/08/00]

World Wide Web, (2001) [On line].

Available: http://www.encyclopedia.com/articlesnew/50589.html

[Accessed on 14/9/00]



Appendix A : Questionnaire 1 (†)

Open day - Potential target population

You are requested to complete this questionnaire to assist us in determining whether there is a need for a web site for the **Program in Interior Design**.

Please answer this questionnaire as honestly as possible. There is no right or wrong answer. Your answers will be handled in confidence and will be incorporated with those of others. You will remain anonymous, since you do not have to identify yourself.

Thank you for your time an	d participation.		
1. Personal information	n:		
Age:		Gender:	
Interests/Hobbies:		Marital Sta	itus :
Home language :		Current Jo	b:
Means of transport : (indicate	ate by circling the	e appropriate one	
Bicycle Car	Bus	Taxi	Other
2. Educational backgr Highest level achieved Symbol obtained in following		nool:	
Mathematics :	Science :		Home Economics:
Accounting:	Computer so	cience :	Geography:
Biology:	- Company		
3. Geographical and of Where is your hometown:	cultural informat	ion:	
Gauteng	Mpumalanga		
North West	Free State		
Namibia	Other		
Northern Province			
What is your language pre	ference:		
Which other languages do	write : read :		
What type of accommodat Home Residence/Ho	•	when enrolled (tic partment/Flat	k applicable) : Other (indicate) :
1			· · · · · · · · · · · · · · · · · · ·

Computer skills / Literacy:

If yes, how	often (indicate	e): Daily	Weekly	Monthly	Occasionally
Do you hav	e your own co	mputer :			
If no, do yo	u have access	to one :			
What type	of computer do	you use reg	jularly :		
386	486	Pentium	I Penti	um II P	entium III
How would	you rate your	computer sk	ills :		
Expert	Good	•	/erage	Poor	

internet use: Do you have an Internet connection: Yes No For which purpose do you use the Internet? (circle all the applicable choices) General information seeking Specific information seeking Communication **Surfing** If yes, which service provider do you use ?(e.g. M-WEB, iAfrica, Intekom, etc): Which browser do you use: Internet Explorer Netscape Other How do you currently obtain information on a research topic (tick applicable): Library **Magazines Internet** Other (indicate): If you search for information on the Internet, which method/s do you use : Surfing Search engine (which): **URL** from magazine

A Marketing.

Other (specify):

	ricuing.					
How did t	he informa	ition about	t the Open da	ay reach you : (inc	dicate ONE)	
Poster	Flyer	TV	Radio	Newspaper	Other (i	indicate) :
Why are	you interes	ted in the	design cours	se :		-
Talent				cial prospects	Interest	Other:
For which	n course die	d you initia	ally attend the	e Open Day :		
If the Ope	en day cha	nged your	mind, what	course are you no	w interested	l in and why?:
Your gen	eral impres	sion of the	e design pre	sentation :		
Exceller	nt 	Good	d	Averag	je	Poor
gener	al informat	tion (entry		or Design have be s, directions to loo n	•	you, in terms of
Yes			No			



Appendix B: Questionnaire 2 - Target population analysis (+)

Personal Information	Please answer the questions by drawing a circle an number in a shaded block or write your answer(s) in provided.	round an appropriate the shaded space		Office use
General Information 1. What is your involvement in the Program in Interior Design? (you may indicate more than one) Lecturer 1 Student 2 Related Profession (e.g. Architect) 3 Interested Individual 4 Other (specify) 2. What is your occupation? V1 4 5 7 8 9-10 Personal Information	SECTION A			
1. What is your involvement in the Program in Interior Design? (you may indicate more than one) Lecturer	Respondent		VR	15
(you may indicate more than one) Lecturer Student Related Profession (e.g. Architect) Interested Individual Other (specify) 2. What is your occupation? V1	General Information			
Student 2 Related Profession (e.g. Architect) 3 Interested Individual 4 Other (specify) 4 2. What is your occupation? V2 5 V3 6 V4 7 V5 8 Personal Information	, and the state of	Interior Design?		
Related Profession (e.g. Architect) Interested Individual Other (specify) 2. What is your occupation? Va 6 V4 7 V5 8 Personal Information	Lecturer	1	V1	4
Interested Individual Other (specify) 2. What is your occupation? V6 9-10 Personal Information	Student	2	V2	5
2. What is your occupation? V6 9-10 Personal Information	Related Profession (e.g. Architect)	3	VЗ	6
2. What is your occupation? V6 9-10 Personal Information	Interested Individual	4	V4	7
Personal Information	Other (specify)		V5	8
Personal Information	2. What is your occupation?			
			V6	9-10
3. How old are you? (age in completed years)	Personal Information			
	3. How old are you? (age in completed years)			
			V7	11-12

4. In which province is your hometown situated? (only one answer)

Gauteng (South Africa)	1
Mpumalanga (South Africa)	2
Kwazulu Natal (South Africa)	3
North West (South Africa)	4
Northern Province (South Africa)	5
Free State (South Africa)	6
Cape Province (South Africa)	7
Other (specify)	

Male	1
Female	2

6. What is your language Group (you may indicate more than one)

1
2

SECTION B

7. Present Accommodation: (only one answer)

House	1
Flat	2
Rented Room	3
University Residence	4
Other (specify)	

Offi	CO	HISP	٠

	 	1
V 8		13-1

V 9	15	

V10	16
V11	17
V12	18

	l
V13	19

			Office use only
Possibility to attend lectures/work shops/ cl	iasses: (only one answer)	
Always	1		V14 20
Regularly	2		
Irregularly	3		
Seldom	4		
Never	5		
9. If you answered anything other than "alwa below.	ys" state	e the main reason	
			V15 21-22
10. Consider the options below and rate how fellow students at each option. Use a frequently and 5 = most frequently.			
Via Internet			V16 23
Telephone			V17 24
Social gathering]	V18 25
Appointment			V19 26
Very seldom]	V20 27
11. Consider the options below and rate how your lecturers at each option. Use a sefrequently and 5 = most frequently			
Via Internet			V21 28
Telephone			V22 29
Social gathering			V23 30
Appointment			V24 31
Very rarely			V25 32



SECTION C		Office use only
In this section information regarding computer lituse will be obtained.	teracy and computer	
12. Consider each option below and prioritize you scale from 1 to 5 where 1 = least frequently	our access to a computer on a and 5 = most frequently	
Home		V26 33
Work		V27 34
Internet Cafe		V28 35
Learning Institution (e.g. University)		V29 36
None		V30 37
13. How do you rate your computer skills? (only	one answer)	
Excellent	1	V31 38
Above Average	2	
Average	3	
Poor	4	
14. How often do you work on a computer? (only	y one answer)	
Daily	1	V32 39
Weekly	2	
Monthly	3	
Never	4	
15. Consider each option below and prioritize scale from 1 to 5 where 1 = least frequently		
Business		V33 40
Studies		V34 41
Internet surfing		V35 42
Other (specify & prioritize)		V36 43
		V37 44



16. Do you have access to the Internet? (only one	e answer)	Office use only
Yes	1	V38 45
No	2	<u> </u>
17. Consider each option below and prioritize y scale from 1 to 5 where 1 = least frequently a		
General information seeking		V39 46
Specific information seeking (e.g. research)		V40 47
Communication		V41 48
Surfing		V42 49
18. Consider each option below and prioritize the on a specific subject on the Internet on a single 1 = least frequently and 5 = most frequently		
Search Engine		V43 50
Trial and Error		V44 51
Time-consuming effort		V45 52
Specific web site address		V46 53
Other (specify & prioritize)		V47 54
		V48 55
19. If information is obtained through trial and error what would your link words be to search for a		V49 56-57
20. A web site for the Program in Interior Design v (you may indicate more than one)	will be beneficial for:	
Advertising/marketing the Department	1	V50 58
Communication (e.g. e-mail, bulletin board)	2	V51 59
Access to information regarding the program. (e.g. study guides/ work shops)	3	V52 60
Learning & international participation in projects/ work shops	4	V53 61



		Office use only
21.	Will a communication facility on the Web site of the Program in Interior Design, create a comfortable and effective channel of interacting with all parties involved? (only one answer)	
Yes	1	V54 62
No	2	
22.	What is the most important thing you would like to find on a web site for the Program in Interior Design in order to be functional and usable for you, the user?	
		V55 63-64

Thank you for your participation.



Appendix C: Questionnaire 3 (+)

Evaluation of prototype web site

- 1. The purpose of this questionnaire is to evaluate a web site created for the Program in Interior Design, University of Pretoria.
- 2. Your assistance and input is greatly appreciated. It will be taken into consideration in the refining of the product and will contribute to the success thereof.
- A critical observation of the web site is imperative.
- This site is best viewed on a screen of <u>600x800 pixels</u> using <u>small font</u> and through Internet Explorer / Netscape Navigator.
- 5. Any comments and/or suggestions will be appreciated.
- 6. Please note:

Regarding the communication facilities: A listsery (group e-mail) and a bulletin board will be available as soon as the web site has been approved.

7. Answer the questions in the following manner:

Draw a circle around the appropriate number.

Answers for the following questions are on a scale from 1-5. They have the following values:

E = Excellent (1) G = Good (2)

AA = Above average (3)

A = Average (4)

P = Poor(5)

Where no possibility is given or an indication is given to SPECIFY, supply your own written answer or place the numbers from 1 to 5 next to the appropriate option.

Thank you for your co-operation and your time.

Maryke Meter and Friedel van Zyl



Office use only

Layout of the web site	E	G	AA	A	P	
The appearance of the web site and the overall "look" is:	1	2	3		6	
2. The readability (size and space of writing) on the pages is:	•	2	3	•	6	
3. The consistency of all the elements throughout the web site is:	1	2	3	•	6	
4. The use of colours in the web site is:	1	2	3	4		
5. The choice of fonts (type of writing) is:	1	2	3	4	5	
6.The layout of the site map is:	1	2	3	4	•	
Navigation	E	G	AA	A	P	
7. The navigation from and to the home page is:	1	2	3	4	5	
8. The consistency of the buttons through out the web site is:	1	2	3	4	5	
9. The layout of the site map for navigation purposes is:	1	2	3	4	8	
10. The different navigation options in the site is clear and easy to follow:	1	2	3		5	
11. The "Useful Links" page will attract more visitors:	1	2		•	5	
Content	E	G	AA	A	P	
12. The amount of content per web page is presented in manageable chunks:	1	2	3	4	5	
13. The content is understandable and appropriate:	1	2	3	4	5	
14. The way in which the content is presented gain the attention of the visitor:	1	2	3	4	5	
15. The choice of the graphics is:	1	2	3	4	5	



Office use only

Communication, Support and ease of							
use	E	G	AA	A	Р		
16.: The possibility of communicating with other students and lecturers, with a bulletin board and listserv will be:		2	3	4	•		
17. The "Contact Details" on the web site are easy accessible and clear	1	2	•	4			
18. The web site enables and promotes learning:	1	2	3	4	•		
19. The download time of the web pages is:	1	2	3	4	5	Ī	
20. The web site is easy to use:	1	2	3	4	5	Ī	



Appendix D: Questionnaire 4 (†)

Expert evaluation of a prototype web site

- 1. The purpose of this questionnaire is to evaluate a web site created for the Program in Interior Design, University of Pretoria.
- 2. Your assistance and input is greatly appreciated. It will be taken into consideration in the refining of the product and will contribute to the success thereof.
- 3. In order to evaluate the web site, it is important to take your time looking at the site critically on the following URL (web address)

http://hagar.up.ac.za/catts/id/index.htm

- 4. This site is best viewed on a screen of <u>600x800 pixels</u> using <u>small font</u> and through Internet Explorer / Netscape Navigator.
- 5. Any comments and/or suggestions will be appreciated.
- 6. Please note:

Regarding the communication facilities: A listserv (group e-mail) and a bulletin board will be available as soon as the web site has been approved.

7. Answer the questions in the following manner:

Draw a circle around the appropriate number.

Answers for the following questions are on a scale from 1-5. They have the following values:

E = Excellent (1)

G =Good (2)

AA =Above average (3)

A =Average (4)

P =Poor (5)

Please return the completed questionnaire to:

leonr@lantic.co.za and friedel@netactive.co.za

Thank you for your participation.

Maryke Meter and Friedel van Zyl



Office use only

2. The readability (size and space of writing) on the pages is: 3. The consistency of all the elements throughout the web site is: 4. The use of colours in the web site is: 1 2 3 4 5	Layout of the web site	E	G	AA	A	P
writing) on the pages is: 3. The consistency of all the elements throughout the web site is: 4. The use of colours in the web site is: 1 2 3 4 5	The appearance of the web site and the overall "look" is:	1	2	3	4	5
throughout the web site is: 4. The use of colours in the web site is: 1 2 3 4 5	2. The readability (size and space of writing) on the pages is:	1	2	3	0	5
	3. The consistency of all the elements throughout the web site is:	1	2	3	4	5
5. The choice of fonts (type of writing) is: 1 2 3 4 5	4. The use of colours in the web site is:	1	2	3	4	5
	5. The choice of fonts (type of writing) is:	1	2	3	4	5
6. The layout of the site map is:	6.The layout of the site map is:	1	2	3	4	5

Navigation	E	G	AA	A	P
7. The navigation from and to the home page is:		2	3	4	5
8. The consistency of the buttons through out the web site is:	1	2	3	4	5
9. The layout of the site map for navigation purposes is:	j	2	3	4	5
10. The different navigation options in the site is clear and easy to follow:	1	2	3	•	5
11. The "Useful Links" page will attract more visitors:	1	2	3	•	5



Office use only

2. The amount of content per web page s presented in manageable chunks: 3. The content is understandable and appropriate: 14. The way in which the content is presented gain the attention of the visitor: 15. The choice of the graphics is: 1	ontent	E	G	AA	A	Р	
A. The way in which the content is presented gain the attention of the visitor. 1. The choice of the graphics is: 1. 2. 3. 4. 5. 1. 2. 3. 4. 5. 1. 2. 3. 4. 5. 1. 2. 3. 4. 5. 1. 3. 4. 5. 1. 3. 4. 5. 1. 3. 4. 5. 1. 3. 4. 5. 1. 5. The choice of the graphics is: 1. 2. 3. 4. 5. 1. 3. 4. 5. 1. 3. 4. 5. 1. 5. The possibility of communicating with other students and lecturers, with a bulletin board and listserv will be: 1. The "Contact Details" on the web site are easy accessible and clear 1. The web site enables and promotes learning: 1. The download time of the web pages is: 1. 2. 3. 4. 5. 1. 3. 4. 5. 1. 3. 4. 5. 1. 3. 4. 5. 1. 3. 4. 5. 1. 3. 4. 5. 1. 3. 4. 5. 1. 3. 4. 5. 1. 3. 4. 5. 1. 3. 4. 5. 1. 3. 4. 5. 1. 3. 4. 5. 1. 3. 4. 5. 1. 3. 4. 5. 1. 3. 4. 5. 1. 5. 1. 5. The web site is easy to use:	2. The amount of content per web page presented in manageable chunks:		2	Š	4	8	
Communication, Support and ease of use Communication, Support and ease of use E G AA A P		1	2	3	4	5	
Communication, Support and ease of use E G AA A P 16.: The possibility of communicating with other students and lecturers, with a bulletin board and listserv will be: 17. The "Contact Details" on the web site are easy accessible and clear 18. The web site enables and promotes learning: 19. The download time of the web pages is:	4. The way in which the content is resented gain the attention of the visitor.	1	2	3	4_	5	
Communication, Support and ease of use E G AA A P 16.: The possibility of communicating with other students and lecturers, with a bulletin board and listserv will be: 17. The "Contact Details" on the web site are easy accessible and clear 18. The web site enables and promotes learning: 19. The download time of the web pages is:				3	4		
other students and lecturers, with a pulletin board and listserv will be: 17. The "Contact Details" on the web site are easy accessible and clear 18. The web site enables and promotes earning: 19. The download time of the web pages is:		E	G	AA	A	P	
site are easy accessible and clear 18. The web site enables and promotes learning: 19. The download time of the web pages is:	other students and lecturers, with a		2	3	4	5	
19. The download time of the web pages is: 20. The web site is easy to use:	17. The "Contact Details" on the web site are easy accessible and clear	1	2	3	4	5	
19. The download time of the web pages is:		1	2	3	4	5	
20. The web site is easy to use:	carring.	4	2	3	4	5	
######################################	19. The download time of the web pages						