

**DEVELOPING A CURRICULUM MODEL FOR
ARCHITECTURAL EDUCATION IN A CULTURALLY
CHANGING SOUTH AFRICA**

BY

FINZI EDWARD SAIDI

submitted in fulfilment of a part of the requirements for the degree
voorgelê ter vervulling van 'n deel van die vereistes vir die graad

PHILOSOPHIAE DOCTOR
(ARCHITECTURE)

in the Faculty of Engineering, Built Environment and Information Technology,
University of Pretoria
in die Fakulteit Ingenieurswese, Bou-omgewing en Inligtingstegnologie,
Universiteit van Pretoria

July 2005

University of Pretoria etd – Saidi, F E (2005)

'Education must be more important than architecture,'

'Education must be **ahead** of architecture practice.'

Teymur N

SUMMARY

Developing a Curriculum Model for Architectural Education in a Culturally Changing South Africa.

By Finzi Edward. Saidi

Supervisor: Professor Roger Fisher
Department of Architecture
University of Pretoria
Doctor of Philosophy

Through education, a society hopes to reproduce itself, and through architecture a society reveals its values, aspirations, norms, beliefs and its cultural composition in the built environment. The first democratic elections in 1994 marked the end of the apartheid era and the beginning of the definition of a new era that would represent the new aspirations of all the people of South Africa. These fairly recent changes are important for the reshaping of the architectural profession as it seeks to interpret new meanings, views and aspirations of the new South African society in the built environment.

A starting point in the transformation of the profession is the development of a curriculum model in schools of architecture that will ensure continuous adaptation to the changes in society. Accreditation reports for architecture schools studied in this thesis revealed the nature of issues that confront South African schools of architecture. This study revealed that issues of poverty like housing and transformation of the architectural profession do not receive adequate attention in schools of architecture. Implementation of Outcomes Based Education in architecture schools is also investigated to provide insight into its impact on education for architects.

The study also reviewed and categorized the contemporary curriculum models as used in the South African schools of Architecture according to an array of philosophies and principles that underlie curricula. The study revealed that an eclectic approach to design of curricula is ideal for the multicultural society of South Africa that seeks to balance the demands of the local and global context in its education. This study also revealed that most architecture programmes retain their traditional programmes because the university is the largely the locus of learning, Experiential learning is minimal as well as little flexibility as most of the learning course- modules are required modules.

The research of the educational experiences of architecture practitioners revealed important characteristics of the nature of architectural education and practice in South Africa and the preparedness of architects to practice in their context. It was concluded that although contemporary architecture programmes are well organised, they fail to provide architectural education that address the wider issues of the South African society.

The study also investigated the range of needs of a changing South Africa from global through to local scales, which need to be addressed in the curricula of schools of architecture in South Africa. These include a range of legislation, which this investigation has shown are driving curricula change in other disciplines, but not in architecture curricula.

The study proposes a curriculum model for architecture based on the Post-Modern philosophy, which can effectively accommodate the needs of a changing South Africa in the educational programmes for architects. Such a model defines with clarity the pedagogic or epistemological reasons for directing change in an increasingly complex South African society.

KEY WORDS: Architectural Education, Post Modern Curriculum, Organizing Principles, OBE curriculum matrix, Experiential learning, Modular Cyclical Approach, Social Problems, Critical Pedagogy, Enabling Outcomes, Eclectic Approach.

ACKNOWLEDGEMENTS

I am particularly grateful to a number of people whose invaluable contributions led to the completion of this thesis. Firstly, I wish to thank my supervisor Professor Roger Fisher for the critical reviews that led an increased understanding of the subject matter. I thank Professor Michael Murphy for introducing me to the subject and for making me see it's importance. I also wish to thank Professor Schalk Le Roux for the confidence and encouragement. I wish to thank Mrs. Rina Du Toit, for the assistance in developing the questionnaire and statistical analysis. I wish to thank also Professor R.F. Sandenbergh the Dean of EBIT, for the encouragement and my colleague Amira Osman and all those who I have failed to mention but who helped me in one way or the other. Lastly, I wish to thank my family, Mum and Dad, wife Mwansa and the children- Katongo, Taonga and Yangeni for the encouragement and tolerance.

TABLE OF CONTENTS

Summary.....	i
Acknowledgements	ii
Table of Contents	iii
List of Tables	viii
List of Figures	x

CHAPTER 1 THE PROBLEM AND ITS SETTING..... 1

1.1. INTRODUCTION	1
1.2. THE STATEMENT OF THE PROBLEM.	2
1.2.1 The main problem:.....	3
1.3. THE SUB-PROBLEMS.....	3
1.3.1 Sub- Problem 1	3
1.3.2 Sub- Problem 2.....	4
1.3.3 Sub- Problem 3.....	4
1.3.4 Sub- Problem 4.....	4
1.4. DELIMITATIONS:.....	4
1.5. DEFINITIONS.....	5
1.6. ASSUMPTIONS	5
1.7. ABBREVIATIONS.....	6
1.8. THE IMPORTANCE OF STUDY.....	7
1.9. HOW DOES THIS STUDY DIFFERS FROM OTHER STUDIES ON ARCHITECTURAL CURRICULA	11
1.10. THE RESEARCH METHODOLOGY	11

CHAPTER 2 -CURRICULUM MODELS AS USED IN THE SOUTH AFRICAN SCHOOLS OF ARCHITECTURE. ... 13

2.1. SUB- PROBLEM 1.....	13
2.2. OVERVIEW OF CHAPTER.....	13
2.3. CURRICULUM THEORY.....	13
2.3.1 Producing a Curriculum.....	15
2.4. PHILOSOPHICAL FOUNDATIONS OF CURRICULUM.	16
2.4.1 Perennialism	18
2.4.2 Essentialism.....	18
2.4.3 Progressivism	18
2.4.4 The relevant curriculum.....	19
2.4.5 The Humanist curriculum	19
2.4.6 Reconstructionism	20
2.4.7. Modernism.....	20
2.4.8. Post-Modernism.....	20
2.5. INTEGRATED AND COLLECTION TYPE- CURRICULA	23
2.5.1. Collection type curricula	23
2.5.2 Integrated type curricula.....	23
2.6. A SYSTEMATIC APPROACH TO CURRICULUM CHANGE	23
2.6.1 Academic Discipline As an Organising Principle	25
2.6.2 Student Development.....	26
2.6.3 Great Books and Ideas	26
2.6.4 Social Problems.....	27
2.6.5 Selected Competences	27
2.7. ECLECTIC APPROACH TO CURRICULUM REVIEW	28
2.8. UNIVERSITY OF CAPE TOWN	30
2.8.1 Bachelor of Science /Architectural Studies –3/2 Degree Structure	30

2.8.2 Outcomes	32
2.8.3 Curriculum Organising Principle.....	33
2.8.4 Establishing Curricular Emphases.....	34
2.8.5 Accreditation Boards: Comments on the Curriculum	35
2.8.6 Summary	38
2.9. UNIVERSITY OF FREE STATE.....	39
2.9.1 Bachelor of Science /Architectural Studies –3/2 Degree Structure	39
2.9.1 Outcomes	41
2.9.3 Curriculum Organising Principle.....	42
2.9.4 Establishing Curricular Emphases.....	43
2.9.5 Accreditation Boards: Comments on the Curriculum	44
2.9.6 Summary	47
2.10. UNIVERSITY OF PRETORIA	48
2.10.1 Bachelor of Science /Architectural Studies –3/2 Degree Structure	48
2.10.2 Outcomes	50
2.10.3 Curriculum Organising Principle.....	51
2.10.4 Establishing Curricular Emphases.....	52
2.10.5 Accreditation Board: Comments on the Curriculum.....	53
2.10.6 Summary	57
2.11. UNIVERSITY OF PORT ELIZABETH.....	58
2.11.1 Bachelor of Science /Architectural Studies –3/2 Degree Structure	58
2.11.2 Outcomes	60
2.11.3 Curriculum Organising Principle.....	61
2.11.4 Establishing Curricular Emphases.....	62
2.11.5 Accreditation Boards: Comments on the Curriculum	63
2.11.6 Summary	64
2.12. UNIVERSITY OF WITWATERSRAND.....	65
2.12.1 Bachelor of Science /Architectural Studies –3/2 Degree Structure	65
2.12.2 OUTCOMES	68
2.12.3 Curriculum Organising Principle(s).....	69
2.12.4 Establishing Curricular Emphases.....	70
2.12.5 Accreditation Boards: Comments on the Curriculum	71
2.12.6 Summary	72
2.13. ANALYSIS OF OUTCOMES FOR PROFESSIONAL PROGRAMMES	74
2.14. CATEGORISATION OF CURRENT CURRICULA OF VARIOUS SOUTH AFRICAN SCHOOLS OF ARCHITECTURE	77
2.15. CONCLUSIONS	80

CHAPTER 3: CULTURAL CONTEXT, EDUCATION AND PRACTICE ISSUES..... 82

3.1. SUB- PROBLEM 2.....	82
3.2. OVERVIEW OF CHAPTER.....	82
3.3. CHANGE IN SOCIAL ISSUES.....	82
3.4. CHANGES IN CULTURAL ISSUES.	85
3.5. ARCHITECTURE IN AFRICA.	87
3.6. ARCHITECTURE IN LATIN AMERICA.	90
3.7. CHANGES IN THE ARCHITECTURAL EDUCATION	92
3.8. CURRICULUM IN CONTEXT	95
3.9. DESIGN OF DEGREE STRUCTURE.....	97
3.10. FINDINGS.....	104
3.11. PERCEPTIONS OF PRACTICING ARCHITECTS: EDUCATION AND PRACTICE.....	106
OVERVIEW OF SECTION.....	106
3.12. SAMPLE OF ARCHITECTS.	107

3.13. RESPONSE DATA FOR ARCHITECTS	107
3.14. ASSESSMENT OF CURRENT CONTENT OF ARCHITECTURE SCHOOLS	108
3.15. THE EXPERIENCE OF ARCHITECTS AS LEARNERS, IN TERMS OF IMPLICIT LEARNING AND ESTABLISHING CULTURE.....	109
3.16. SUMMARY OF THE RESULTS.....	110
3.17. MAINSTREAM ARCHITECTURE KNOWLEDGE.....	111
3.18. BUSINESS KNOWLEDGE.....	113
3.19. CLIENT RELATIONS	115
3.20. ACCOUNTING.....	116
3.21. COMPETING PROFESSIONS.....	117
3.22. RESPONSE OF SCHOOLS TO DEMOCRATIC CHANGES	118
3.23. POLITICAL CONTEXT.....	120
3.24. MOTIVATIONAL FRAMEWORK FOR CULTURALLY RESPONSIVE TEACHING.	121
3.24.1 Establishing Inclusion in Architecture schools	121
3.24.2 Developing Attitude.....	122
3.24.3 Enhancing Meaning	123
3.24.4 Engendering Competence.....	124
3.25. RACIAL AND GENDER ISSUES IN ARCHITECTURE SCHOOLS	125
3.25.1 Gender Issues.....	125
3.25.2 Racial Diversity	127
3.26. COURSES THAT INSTILL SOCIAL RESPONSIBILITY (PERCENT (NUMBER.)	127
3.27. GLOBAL ISSUES.....	128
3.28. LOCAL RELEVANCE	129
3.29. TEAMWORK IN ARCHITECTURAL PRACTICE AND EDUCATION.....	129
3.30. ECONOMIC ENVIRONMENT.....	130
3.31. OTHER CHANGES IN THE ARCHITECTURE PROFESSION	130
3.32. ARCHITECTS' PERCEPTION OF SOUTH AFRICAN PROBLEMS.....	131
3.33. DESIGN STUDIO: ASSESSMENT, TIME AND RELATIONSHIP TO OTHER COURSES	132
3.34. DESIGN PROJECTS.....	133
3.35. THE CRIT.....	133
3.36. STUDIO MASTER'S DOMINANCE.....	134
3.37. THE TECHNOLOGICAL CHANGES IN HAPPENING IN SOUTH AFRICA AND IN THE GLOBAL SOCIETY ARE CHANGING CURRICULA AND THE WAY ARCHITECTURE IS BEING TAUGHT IN SCHOOLS.	135
3.38. FINDINGS	138
3.39. CONCLUSION.....	142
CHAPTER 4:LEGISLATIVE FRAMEWORK.....	143
4.1. SUB- PROBLEM 3.....	143
4.2. OVERVIEW OF CHAPTER.....	143
4.3. REVIEW OF LITERATURE: LEGISLATION RELATING TO THE ARCHITECTURAL PROFESSION.	143
4.3.1 The Council for the Built Environment Act.....	144
4.3.2 Architectural Profession Act (SACAP).....	144
4.3.3 South African Qualifications Authority Act	145
4.4. CHANGE IN SOUTH AFRICA EDUCATION: AN EVOLVING PARADIGM.....	145
4.4.1 Counteracting the former system	146
4.4.2 Bridging the gap between education and training.....	146
4.4.3 Preparing South Africans for the 21 st Century:	146
4.5. GRADUATENESS AND GENERIC SKILLS.....	149
4.6. RECOGNITION OF PRIOR LEARNING (RPL).....	150

4.7. CITIZENSHIP	151
4.8. ACADEMIC FREEDOM VERSUS PUBLIC ACCOUNTABILITY	151
4.9. DISTANCE EDUCATION	152
4.10. PROGRAMME DEVELOPMENT	152
4.11. COHERENCE.....	153
4.12. GLOBAL CHALLENGE	153
4.13. PROBLEM-BASED -CURRICULUM.	154
4.14. NATIONAL QUALIFICATIONS FRAMEWORK	155
4.15. ACADEMIC DEVELOPMENT: AD OR BRIDGING PROGRAMMES	156
4.16. PROBLEMS WITH IMPLEMENTATION OF NQF	157
4.17. CURRICULUM DEVELOPMENT PROCESS.	158
4.18. CURRICULUM DEVELOPMENT PROCESS USING OUTCOMES-BASED CURRICULUM APPROACH.....	158
4.18.1 Life Roles.....	162
4.18.2 Underlying Abilities	162
4.18.3 Ways of Thinking	162
4.18.6 Student socialization	165
4.19. CURRICULUM AND ACADEMIC PROGRAMME DEVELOPMENT IN HIGHER INSTITUTIONS OF LEARNING.....	165
4.20. ARTICULATION	166
4.21. PORTABILITY OF CREDITS AND CREDIT VALUES	167
4.22. ACCESS, FLEXIBILITY AND LIFE LONG LEARNING.	167
4.23. QUALITY ASSURANCE	167
4.24. DISHARMONIOUS PARTNERSHIP BETWEEN SAQA AND HIGHER EDUCATION. ..	168
4.25. RESISTANCE OF NQF FROM HIGHER EDUCATION.....	169
4.26. INTEGRATED AND COLLECTION TYPE- CURRICULA	169
4.27. CRITICAL ANALYSIS	170
4.28. SUMMARY AND CONCLUSIONS	171

CHAPTER 5 THE POST-MODERN ARCHITECTURE CURRICULUM..... 173

5.1. SUB- PROBLEM 4.....	173
5.2. OVERVIEW OF CHAPTER.....	173
5.3. CRITICAL THINKING	175
5.4. CRITICAL PEDAGOGY	176
5.5. TYPES OF GRADUATES.....	176
5.6. SUSTAINABLE ARCHITECTURE PROGRAMMES	177
5.6.1 Sustainable Curriculum Matters	178
5.6.2 Sustainable Curriculum Lasts (Evolves)	179
5.6.3 Sustainable Curriculum Spreads.....	179
5.6.4 Sustainable Curriculum is socially just	179
5.6.5 Sustainable Curriculum is Resourceful.....	179
5.6.6 Sustainable Curriculum Promotes Diversity	179
5.6.7 Sustainable Curriculum is Activist	180
5.7. FACTORS THAT INFLUENCE OF CURRICULUM MODELS IN UNIVERSITIES:.....	180
5.7.1 The Missions of Universities.....	180
5.7.2 Lecturers and their Specific Expertise and Interests.....	181
5.7.3 Location of School within a Faculty	181
5.8. THE FACULTIES LOCATED WITHIN A PARTICULAR UNIVERSITY.....	182
5.9. EXPERIENTIAL LEARNING.....	182
5.10. SOCIAL PROBLEMS AS AN ORGANIZING PRINCIPLE FOR ARCHITECTURE CURRICULUM.....	184
5.11. OBE	186
5.12. OBE CURRICULUM MATRIX	187

5.13. ENABLING OUTCOMES IN ARCHITECTURAL EDUCATION	191
5.14. OVERALL STRUCTURE	191
5.15. MODULAR CYCLICAL APPROACH TO THE COURSE STRUCTURE	192
5.16. COURSE LOAD	193
5.17. CONTENT	193
5.18. ENABLING OUTCOMES AND LEARNING EXPERIENCES.	194
5.19. RECOMMENED CURRICULUM	195
5.19.1 First Year	195
5.19.2 Second Year	197
5.19.3 Third Year	199
5.19.4 Fourth Year Specialized	201
5.19.5 Fifth Year Specialized	203
5.20. CONCLUSION	204
CHAPTER 6 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS.....	206
6.1. OVERVIEW OF CHAPTER.....	206
6.2. REVIEW OF PRECEDING CHAPTERS.....	206
6.2.1 Chapter 1	206
6.2.2 Chapter 2	207
6.2.3 Chapter 3.....	211
6.2.4 Chapter 4.....	216
6.2.5 Chapter 5.....	218
6.3. UNIQUE CONTRIBUTION OF THE STUDY AND EXPANSION OF THE BODY OF KNOWLEDGE.....	219
6.4. OPPORTUNITIES FOR FURTHER RESEARCH.	221
6.5. SHORTCOMINGS OF THE STUDY.....	225
BIBLIOGRAPHY.....	226
APPENDICES.....	234
APPENDIX A: QUESTIONNAIRE DOCUMENT	234
APPENDIX B: LETTER TO ARCHITECTS	243
APPENDIX C INTERVIEW WITH PROFESSOR LINDSAY BREMNER	244
APPENDIX D INTERVIEW WITH PROFESSOR ORA JOUBERT	246
APPENDIX E: LETTER TO SCHOOLS REQUESTING FOR CURRICULUM INFORMATION	248
APPENDIX F: CLASSIFICATIONS OF QUESTIONS IN THE QUESTIONNAIRE	249

LIST OF TABLES

TABLE 2.6-1 CONRAD'S THREE STEP FRAMEWORK FOR CURRICULA ANALYSIS.	24
TABLE 2.8-1 CAPE TOWN UNIVERSITY OUTCOMES	32
TABLE 2.8-2 CAPE TOWN UNIVERSITY CURRICULUM ORGANIZING PRINCIPLES.....	33
TABLE 2.8-3 CAPE TOWN UNIVERSITY CURRICULAR EMPHASES	34
TABLE 2.9-1 FREE STATE UNIVERSITY'S OUTCOMES	41
TABLE 2.9-2 FREE STATE UNIVERSITY'S CURRICULUM ORGANIZING PRINCIPLES.....	42
TABLE 2.9-3 FREE STATE UNIVERSITY'S CURRICULAR EMPHASES	43
TABLE 2.10-1 PRETORIA UNIVERSITY'S OUTCOMES	50
TABLE 2.10-2. PRETORIA UNIVERSITY'S CURRICULUM ORGANIZING PRINCIPLES.	51
TABLE 2.10-3 PRETORIA UNIVERSITY'S ESTABLISHING CURRICULAR EMPHASES	52
TABLE 2.11-1 PORT ELIZABETH UNIVERSITY'S OUTCOMES.....	60
TABLE 2.11-2 PORT ELIZABETH UNIVERSITY'S CURRICULUM ORGANISING PRINCIPLE...	61
TABLE 2.11-3 PORT ELIZABETH UNIVERSITY'S ESTABLISHING CURRICULAR EMPHASES	62
TABLE 2.12-1 OUTCOMES FOR WITS UNIVERSITY SCHOOL OF ARCHITECTURE	68
TABLE 2.12-2 CURRICULUM ORGANIZING PRINCIPLE(S). FOR WITS UNIVERSITY SCHOOL OF ARCHITECTURE	69
TABLE 2.12-3 ESTABLISHING CURRICULAR EMPHASES	71
TABLE 3.17-1 MAINSTREAM ARCHITECTURAL KNOWLEDGE	111
TABLE 3.18-1 BUSINESS KNOWLEDGE.	115
TABLE 3.20-1 PREPARATION FOR REALITIES OF BUSINESS AND PRACTICE	116
TABLE 3.21-1 COMPETING PROFESSIONS.....	118
TABLE 3.22-1 CULTURAL AND MULTICULTURAL CONTEXT.....	119
TABLE 3.23-1 POLITICAL CONTEXT	120
TABLE 3.24-1 ESTABLISHING INCLUSION	122
TABLE 3.24-2: DEVELOPING ATTITUDE.....	123
TABLE 3.24-3 ENHANCING MEANING.....	124
TABLE 3.24-4-ENGENDERING COMPETENCE.....	124
TABLE 3.25-1 - RACIAL AND GENDER ISSUES IN ARCHITECTURE SCHOOLS	125
TABLE 3.25-2 GENDER RESPONSE ACCORDING TO AGE.....	126
TABLE 3.25-3 GENDER RESPONSE ACCORDING TO EXPERIENCE.	126
TABLE 3.26-1 RESPONSES TO MULTICULTURAL AND ENVIRONMENTAL ISSUES.	128
TABLE 3.27-1 GLOBAL ISSUES.....	128
TABLE 3.28-1 LOCAL RELEVANCE.....	129
TABLE 3.29-1 TEAMWORK AND INTERDISCIPLINARITY.....	129
TABLE 3.30-1 ECONOMIC ISSUES	130
TABLE 3.31-1 OTHER CHANGES IN THE ARCHITECTURAL PROFESSION	131
TABLE 3.32-1 ARCHITECTS PERCEPTION OF SOUTH AFRICAN PROBLEMS	132
TABLE 3.36-1 DESIGN STUDIO: ASSESSMENT, TIME AND RELATIONSHIP TO OTHER COURSES.....	134
TABLE 3.37-1 COMPUTER CHANGES IN ARCHITECTURAL EDUCATION AND PRACTICE..	135
TABLE 3.37-2 VIEWS ON INTRODUCTION OF COMPUTERS ACCORDING TO EXPERIENCE	136
TABLE 3.37-3 VIEWS ON HIRING OF NEW STAFF ACCORDING TO EXPERIENCE.....	137
TABLE 3.37-4 KEEPING TRACK OF TIME	137
TABLE 3.37-5 DESIGN TEACHING AND COMPUTERS.....	138
TABLE 4.4-1 CURRICULUM RESTRUCTURING IN HIGHER EDUCATION IN POST APARTHEID SOUTH AFRICA SOURCE BREIER. (2001:2)	147
TABLE 4.12-1 SHOW THE COMPARISON BETWEEN MODE 1 AND MODE 2 KNOWLEDGE. (SOURCE: KRAAK, A. 2000, HRSC).....	154
TABLE 4.16-1 NQF IMPLEMENTATION	157
TABLE 4.18-1 OBE MATRIX SOURCE: KILLEN AND SPADY(1999: 204).....	163
TABLE 5.9-1 EXPERIENTIAL LEARNING ACCORDING TO YEAR OF STUDY	183
TABLE 5.9-2 POSITION OF EXPERIENTIAL LEARNING IN A YEAR OF STUDY	183
TABLE 5.12-1 PROPOSED OBE CURRICULUM DESIGN MATRIX.....	189

TABLE 5.15-1 SPLIT SEMESTER SCHEDULE OF ACTIVITIES FOR KNOWLEDGE BASED LEARNING ARCHITECTURE	192
TABLE 5.17-1 THEMES TO GUIDE ARCHITECTURAL LEARNING	194

LIST OF FIGURES

FIGURE 2.4-1: SUMMARIES OF EDUCATIONAL PHILOSOPHIES UNDERPINNING CURRICULUM. (SOURCE: LOGGERENBERG.2000:4)	18
FIGURE 2.8-1 . CAPE TOWN CURRICULUM. SOURCE: 2002 UNIVERSITY OF CAPE TOWN HANDBOOK	31
FIGURE 2.9-1. FREE STATE CURRICULUM STRUCTURE. SOURCE SACA/ RIBA/CAA VISITING BOARD REPORT 2000	40
FIGURE 2.10-1. PRETORIA UNIVERSITY ARCHITECTURE CURRICULUM STRUCTURE. SOURCE HANDBOOK 2004	49
FIGURE 2.11-1. PORT ELIZABETH ARCHITECTURE CURRICULUM STRUCTURE(SOURCE HANDBOOK 2004)	59
FIGURE 2.12-1 WITS UNIVERSITY ARCHITECTURE CURRICULUM. SOURCE HANDBOOK. 2003	67
FIGURE 4.14-1 FUNCTIONS AND STRUCTURES ASSOCIATED WITH NFQ (SOURCE: PRETORIUS, F. 1998:15)	156
FIGURE 4.18-1 FIGURE 1 SHOWS SOME FACTORS THAT INFLUENCE CURRICULUM DESIGN IN THE PRESENT DAY. SOURCE: KILLEN AND SPADY (1999:202)	160

CHAPTER 1 THE PROBLEM AND ITS SETTING

1.1. INTRODUCTION

The thesis addresses the issues of change in the South African society that have a profound and irreversible impact on the architectural education and subsequently on the architectural profession. These fairly recent changes are important for the reshaping of the architectural profession as it seeks to interpret new meanings, views and aspirations of the new South African society in the built environment. A starting point in the transformation of the profession is the development of a curriculum model in schools of architecture that will ensure continuous adaptation to the changes in society.

Through the educating of its young, a society hopes to reproduce itself, and through architecture a society reveals in a visual manner its values, aspirations, beliefs and its cultural composition. It is this linkage between society, education and architecture that makes it important to address changes in the way architects are educated when there has been a shift in the values and beliefs of society.

The first democratic elections in 1994 signaled the end of the apartheid era for South Africa, and the beginning of the definition of a new era that would represent the aspirations of all people. Education in general was one of the first sectors of society in which drastic changes were instituted by the government. This included the sanctioning of Outcomes Based Education as a basis of transforming education and subsequently society. OBE stipulations have characterized most of the curriculum changes that schools of architecture have experienced.

There were and still are other challenges that have been affecting schools of architecture as will many other institutions. Access to universities for all meant that the schools were for the first time teaching a multicultural body of learners. This would naturally have put pressure on the faculties as how to teach a heterogeneous body of learners, each with diverse origins and interests. To continue to teach in the way they had always done in the past would lead to learner dissatisfaction at some point in the future. Additionally the response of education to context so as, to achieve relevance has received more emphasis. How are tutors to know what to teach, how to teach and perhaps even more difficult to evaluate learners in a fair and just manner?

Global relevance and the desire for quality assurance have led universities to subject all architecture programmes to visits by accreditation bodies. These bodies place additional

demands on schools of architecture to change their educational practice in numerous ways.

Apart from government enforced changes in institutions of higher learning, internal demands for research output from lecturers and tutors, has created extra demands on the learner-to-lecturer contact time such that the design studio time has had to be redesigned to accommodate these new demands. Further, use of computers has resulted in learners spending less time in the studio, thereby threatening the basis of learning that distinguishes architecture education from most disciplines. The design studio as the main site of learning is being questioned as practice and the need to rethink how it should evolve is more urgent than ever.

Other changes have come from the architecture profession. Contemporary practice is not the same as in the past. It has to serve a wide society in which issues of poverty and equity are paramount. Further there is increasing competition from other professionals who offer similar or even better articulated services to the clients. The influence of the architect in the built environment has suffered significantly. While others see the need to regain that influence as more important, it may also be time to look at other services in which architects can provide a better service to society than anyone else.

New computer technology is also creating new possibilities, available for architects on a global scale. Preparation of architects in schools of architecture has to be rigorous for such a changing terrain of operation.

There are naturally, fears that these changes raise in faculties of architecture and resistance to change may result. That should be reason why these changes need to be addressed, if meaningful and desired change in the learners is to be achieved.

This thesis seeks initially, to develop an in-depth understanding of the factors necessary for the development of an architecture curriculum that will be accommodating of the dynamic, social, economic, cultural and technological changes in the South African society and ultimately to suggest a curriculum model that can be used to achieve the desired transformation of the built environment and the South African society as a whole.

1.2. THE STATEMENT OF THE PROBLEM.

All architectural professionals obtain their initial education from universities. It is the function of the universities to produce graduates that have a firm grip and understanding of not only the architectural issues but also the various social issues affecting their work in society. This is of importance for them so that they can make meaningful contributions

to society. It therefore means that the university curricula must be developed so as to adequately prepare the graduates in order for them to be able to tackle effectively and efficiently the problems in society. There are two main factors that have shaped the schools' curricula in South Africa.

Firstly, South African architectural schools, like most African architectural schools adopted their educational systems from either their European or North American counterparts. Universities here, have their origins in a western type of education, particularly British whose manner of learning is specific to their kind of society. Secondly, the recent changes in the South African social-political set-up have initiated irreversible changes in society, which have evolved a new social structure. Architecture has to keep pace with these changes if it is not to be alienated from society. This can only be ensured if architecture curricula of South African Schools of architecture address the social and political meanings of built environment, which have largely been ignored.

With these changes, graduates, upon entering the profession face new and mostly relatively unfamiliar challenges. Schools therefore, have the difficult task of developing dynamic curricula that will address the new problems. Historically, there exists a close relationship between architecture schools and architectural practice. The profession faces these new challenges in its everyday tasks. The identification and understanding of how these new and complex issues are reshaping the profession will give useful feedback to the schools with regard to how they could address change in their curricula.

1.2.1 The main problem:

to develop a curriculum model for the education of architects within the needs of a changing South Africa.

1.3. THE SUB-PROBLEMS

1.3.1 Sub- Problem 1

To review and categorize the contemporary curriculum models as used in the South African Schools of Architecture.

Proposition: All contemporary curricula in the South African schools of architecture have some identifiable curriculum model.

1.3.2 Sub- Problem 2

To determine distinctive cultural issues of the South African society that architectural education and its profession must accommodate and reflect.

Proposition: A comprehensive understanding of the society is essential to ensure a built environment that represents all cultural groups.

1.3.3 Sub- Problem 3

Contemporary educational curricula do not address all the needs of a changing South Africa in terms of architectural practice and education.

Proposition: There is a scale of needs of a changing South Africa from global through to local scales, which are not addressed in the curricula in schools of architecture in South Africa.

1.3.4 Sub- Problem 4

For the education of architects what curriculum model may effectively address the needs of a changing South Africa.

Proposition: A curriculum model can be formulated which effectively accommodates the needs of a changing South Africa in the educational programmes for architects.

1.4. DELIMITATIONS:

- This study is restricted to the architecture programmes in universities that were in existence in 1994. It excludes architecture programmes in Technical Universities formerly known as Technikons that were constituted after 2002.
- This study is not meant to provide an exhaustive model for architectural education but a basis on which future studies could be based.
- This study will not include an analysis of the teachers and students because of time constraints. Where mention is made of these groups of people it will be for the purpose of illustration only.
- Determination of the length of programmes is outside the scope of this study.

- Determining a method of distribution of course credits is outside the scope of this study.

1.5. DEFINITIONS.

Critical thinking skills- are those diverse cognitive processes and associated attitudes critical to intelligent action in diverse situations and fields that can be improved by instruction and conscious effort.

Curriculum- A way of organizing a set of human educational practices with a view to developing graduates who not only have knowledge in specialized fields but who can adapt to changes in society and are capable of making meaningful and effective change in the society.

Technology- refers only to computer utility by professionals and academics in their daily architectural work as a tool.

Multi-cultural society- community made of different race groups.

Culture- A system of values and practices that consolidate group cohesion and national identity without stifling, at the same time, the blossoming of individual identities. These values are a result of appreciation of the past and present issues.

Programme: -The sequential learning activities leading to the award of particular qualifications. These are invariably trans- inter or multidisciplinary, and can be transinstitutional as well. They should be planned, coherent and integrated.

Competence: the state of having the required abilities or qualities.

Curriculum as plan or prescription: curriculum as set out in the official documents such as syllabuses and policy statement.

Curriculum-in-practice: a broader way of analyzing a curriculum than just as an official document. Its aim is to understand way teachers may deviate for plan and way learners learn other things.

Implicit Curriculum-includes all things that students learn at school that are not part of the official or explicit curriculum.

Covert Curriculum- where things are learnt implicitly but are designed to be learnt. They are intended and are thus visible to teachers.

Hidden Curriculum-where things are learnt implicitly and are often not intended- they are invisible to teachers.

1.6. ASSUMPTIONS

- A systematic approach to curriculum change is possible.

- It assumed that a curriculum has an impact on the learning and final outcome of the graduate.
- The way a learner is trained in architectural education has an influence in the kinds of problems they consider important in built environment.
- The architectural profession in South Africa reflects the trends in the built environment of its society.
- Architectural education in South Africa is unique because of its unique location and environmental setting. It therefore requires an appropriate curriculum that appreciates its context.
- South Africa is a multicultural society and hence needs a multicultural architectural curriculum to serve its needs in the built environment.
- The existing duration of periods of study for architecture programmes are taken to be adequate time for students to develop the minimum level of competence.

1.7. ABBREVIATIONS

AD: Academic Development

CHE: Council on Higher Education

CTP: Committee of Technikon Principals

DoE: Department of Education

NEQC: Higher Education Quality Committee

NFQ: National Qualifications Framework

NSB: National Standards Bodies

OBE: Outcomes Based Education

RIBA: Royal Institute of British Architects

RPL: Recognition of Prior Learning

SACAP: South African Council for the Architectural Profession

SAQA: South African Qualifications Framework

SAUVCA: South African Universities Vice-Chancellors' Association

SGBs: Standards Generating Bodies

UK: United Kingdom

USA: United States of America

1.8. THE IMPORTANCE OF STUDY.

Recent changes in South Africa have given rise to a complex society that has increased the need for people to be educated in order for them and their future generations to function and produce a society that represents them. Because of its complexity, education becomes the most effective way of inculcating into the young generation the ideals of a new and complex society. The curriculum in South Africa for education must reflect the cultural ideals of the new society and more importantly it must address the needs of the socially and economically disadvantaged. For a profession that is perceived to be elitist in its practice (Crosbie, 1995:51, Forsyth et al, 2000:247), it must seek relevance by training professionals who must be capable of addressing the social and economic ills of the South African society. In this transitional stage, a major task is to identify gaps in the curriculum that will hinder the processes of change. Material should be brought over from the past curricula and new information will have to be included as a result of new relationships in society.

Understanding and enabling this new knowledge requires that teachers of architecture have to change their ways of teaching. Understanding of the pedagogical and epistemological requirements of learning in a transforming society requires more than just the disciplinary and professional knowledge that they possess. It has been observed that in South African Higher institutions most persons that lead curriculum changes have no formal training in pedagogy. The tendency by most educational practitioners is to continue to teach the way they have been taught and a failure to see the need for curriculum change in the changed context. These teachers, lecturers and tutors are mostly people who are highly qualified and have deep commitment to their profession, but in most cases they fail to understand transformational learning. Therefore where as curricula in the past may have responded well to changes in the knowledge base of their discipline or profession, response to changes in the society in which disciplines profession operate has been poor (Moore, 2004).

Architectural education being an integral part of the process of change has to find ways to adapting and interpreting the new society. This calls for a critical examination of its history, curricula -content, structure and duration of learning process- and practice of architecture as a profession.

Architectural education in developing (Third World) countries has always been a derivative of Western (First) world architectural models. In some cases local needs have been incorporated into their curriculum but it is also true that some of these additions may be more cosmetic than addressing real issues. Architectural schools are expected to

adhere to international standards so as to ensure global acceptability of their graduates. This is perhaps responsible for the bias towards western models which architectural curriculum in developing countries exhibit. It is argued that the purpose of university education in developing countries is to produce graduates who will not only acquire technical skill but also effect broader change in their societies based on critical understanding of the knowledge and the context in which it is generated and organized resulting in a cultural synthesis of the built environment that is unique to and responsive to its context.

Recent research in South Africa has shown that market forces (economic factors) are more dominant in influencing change in any curriculum than other factors. Higher institutions of learning typically respond by adjusting their curricula to produce graduates who can function in this sector of society. This institutional response is typified by sanctioning of studies about graduates profiles and the extent to which they would meet the expectations of the market-place (LHA, 2001.1). Yet demand for public sector skills is as much as there is from economic market especially when a society is undergoing transformation as experienced by the South African Society (Moll, 2004). There is a need to establish the extent to which architecture programmes are producing graduates who can function effectively in the public sector.

Two issues that have been identified as being important in shaping the curricula of the future are the emergence of information technology and multicultural societies. Understanding of these issues is vital if architecture is to be a relevant part in the shaping of the built environment.

Information technology -computer applications- are changing they way architects design building. More importantly new relationships are putting old methods of doing things to test. But it is also recognised that this technology itself changes constantly and at rapid rate. How then should computers be taught in schools of architecture, which may not have the resources-both in terms of funds and manpower?

South Africa is a multicultural society. Its education system, until recently, has however not been one designed as to address the needs of such a complex society. New theories have to be developed to reflect the diverse cultures. For South Africa the development of multicultural curricula means that, in a global sense, its future architects will be better prepared to contribute to the global culture.

It is generally accepted that the course of architecture is a demanding one that keeps the student occupied in the time they study the course. For most students the Design Studio, which is the core course, takes up much of the learning time, sometimes at the expense of the supporting courses. Yet for students to develop into competent architects understanding and an ability to interpret various unrelated information is key to producing a relevant built environment. This ability can be better developed if the curriculum structure enables students to apply knowledge from supporting courses within the design studio. In most of architecture schools this is seldom the case. Graduates have difficulty in handling disparate information in practice, meaning that they seek only those jobs they are comfortable with-aesthetics and technical know how- which the design programmes prepared them for. In a rapidly changing world there is no guarantee that there will be enough employment for everyone so it becomes critical that the type and emphasis of architectural education should be one that makes it possible for new job opportunities to be created.

A well-developed curriculum- both in content and process- is key to the production of graduates that have a holistic understanding of knowledge and who can serve their society effectively. This study seeks to identify the characteristics of various curricula of architectural schools in South Africa with a view to discovering and developing curricula, which allows for the development student's full abilities.

The relevance of architectural education is going to be established by examining the perceptions of architects in practice with regard their architecture school experiences. Similarly the views of architects regarding computer technology and its use in practice will help to define its impact on architectural education. This should indicate whether the emphasis in architectural education is on the real issues facing the profession as it interprets the citizens' aspirations in the built environment.

Debate in education has revealed that curricula are not neutral but are value-laden. Past studies in the USA show that the tendency for architecture programmes to remain static and unyielding in their educational philosophies is the norm (Spreckelmeyer. et. al, 1985:112, Crysler, 1995:208). Further attitudinal studies have shown that practicing architects' concerns and convictions changed very little over a period of twenty-five years (Spreckelmeyer et. Al, 1985:112). Moore (2001:61) comment is more poignant when he comments that:

faculty (architectural or not), when asked about their instruction method, are most likely to respond that they teach in the manner they were taught- a self

perpetuating proposition..., the value laden assumptions of architectural educational process of 150 years ago have been increasingly ingrained with each passing generation, even though our world , and our world views are in the midst of change.

It becomes important to establish whether such characteristics are abound in architecture schools and the profession in South Africa because they are detrimental to the process of change in society.

The choice of the learning philosophies reveals whose interests it is designed to serve. The architecture profession has been viewed to serve the interests of an elite population. Its education process has been designed to replicate this relationship. As the South African society has moved towards an egalitarian society the need to make architecture relevant to all society is emphasised and urgent. This study proposes a principle for organizing curricula that will respond to the need of a wider sector of society.

Changes in learning of architecture do not only originate from the practice of architecture. Theories about how students learn have also contributed to the way architecture is being taught. The students of the nineteen-century were subjected to learning systems than encouraged transmission of knowledge from the lecturer to the students- students were assumed to be empty vessels to be “filled’ with the wisdom of their professors. In the late twentieth century students are called learners, implying that they are responsible for their own learning and they are expected to construct the learning process with their lecturers using their context as a basis. The lecturers are facilitators who may not know what the results of the learning might be. There are numerous issues that such changes bring to the fore. Architecture education practitioners cannot afford to be aloof to these changes in educational practice. The focus now is on how the educational experience can be organized to help the individual learner to achieve their objectives than simply sending them away when they have failed inflexible tests and examinations. This is the thrust of this study, to provide a platform on which the educational practitioners can engage in real debate in order to define an appropriate response for teaching architecture in a more meaningful manner for the learners.

The proposed curriculum model is not meant to replace existing curricula in architectural schools-, which have been largely successful judging by their accreditation records. This study is rather meant to show the gaps, if any, in current curricula, what information may be kept for historical purposes and what new knowledge has to be included, to enable

future architects to develop the ability function professionally and to adapt in an uncertain future. The study proposes sound philosophical concepts on which to base the curriculum the education of architects that will make both architecture education and the profession responsive in terms of its context and producing architects who are aware of the critical issues facing South Africa.

1.9. HOW DOES THIS STUDY DIFFERS FROM OTHER STUDIES ON ARCHITECTURAL CURRICULA

This study is similar to other studies in that it attempts to describe and establish those fundamental aspects of architectural education that have defined curricula by examining what constitutes architectural knowledge in South African schools. This study makes a deliberate attempt to problematise architecture education curricula in the mode of critical pedagogy that suggests social change through educational action. Similar studies, as have been conducted in the USA and UK, as seen in this literature review, define knowledge that is mostly derived from traditional practices of the profession. But this study differs from the others in that it seeks to understand how architectural knowledge is constructed by fostering a view that, issues of learning, are in essence political constructs and that these political issues have largely been absent in the architectural education dialogue. Further this study differs because it seeks to define architecture education using theoretical knowledge that is adopted from liberal concepts of education. It also seeks to define issues that should be acknowledged and incorporated due to the influence of the developmental context of South Africa to architectural education.

1.10. THE RESEARCH METHODOLOGY

The methodology consists of the survey of architectural institutions, review of literature and statistical analysis. The curriculum content, focus, types and duration of programmes of all schools of architecture in South Africa are to be established by means of brochures, handbooks and yearbooks. Interviews with heads of schools of architecture will be conducted to gain insight of the individual characteristics of architecture programmes.

The research will establish issues facing contemporary practicing architects in South Africa and their learning experience in schools of architecture by means of a questionnaire. Here, because of time limitations, the study will be restricted to practicing architects in Gauteng and their views shall be taken to represent common issues faced by architects in South Africa.

The social issues of South African architecture are to be established through the review of contemporary legislation, journals and books by architects, demographers, sociologists and political figures.

Technological issues particularly the introduction of computers in practice are to be established, firstly through a review of contemporary journals and books by leading researchers and professionals, and secondly by means of a survey of South African Architects.

CHAPTER 2 -CURRICULUM MODELS AS USED IN THE SOUTH AFRICAN SCHOOLS OF ARCHITECTURE.

2.1. SUB- PROBLEM 1

To review and categorize the contemporary curriculum models as used in the South African schools of Architecture.

Proposition:

All contemporary curricula in the South African schools of architecture have some identifiable curriculum model.

2.2. OVERVIEW OF CHAPTER

This chapter begins with a discussion of the definitions of term curriculum and the many ways in which it can be interpreted. Meanings associated with curriculum as well as the philosophical underpinnings and types of curricula are also outlined. A systematic approach to curriculum change as tool for analyzing and creating new curricular arrangements is outlined. The curricula of architecture programmes in South African Universities are analyzed and categorized using Conrad's systematic approach to curriculum and against the requirements specified by the NSB 12 as dictated by OBE and SAQA regulations.

2.3. CURRICULUM THEORY

The word curriculum is derived from a Latin root word, which means "racecourse" (Conrad.1978: 4, Marsh and Willis. 2003: 7). Many in the field of education thus interpret it as the race to be run by students, designed with obstacles or hurdles- the subjects - to be overcome. At a very basic level of understanding, a curriculum implies an experience that is set to achieve a particular goal in a defined period of time. Numerous writers on the subject have defined curriculum in many different ways. Each definition reveals the emphases and characteristics within the overall concept of what constitutes a curriculum.

Hoadley and Jansen (2002:145) argue that curriculum choices are influenced by values; particularly by the values held by the politically powerful groups in society. They add that school curricula reflect and reinforce the beliefs of dominant groups. Further they state that curriculum is never neutral and that it carries with it values and assumptions that

reflect the interests of certain sectors of society and disadvantage others (Hoadley and Jansen. 2002:170).

In trying to provide a broader definition of curriculum, Marsh and Willis (2003:13) identify three types of curriculum that are proliferated at any school system that reveal the complexity of individuals' relations inherent in the school atmosphere as they interact with the curriculum. The three types of curriculum suggested by Marsh and Willis are:

- The planned curriculum: which prescribes the desired type of guidance a student should receive.
- The enacted curriculum: how the teachers provide that guidance.
- The experienced curriculum: how the student receives that guidance.

Further arguments have been put forward that when curriculum is examined as practice i.e. examining curriculum as it is experienced – it can be seen that many of the old prejudices and discriminations still occur in school. Although these are often practiced unconsciously and are hidden to both teacher and learners, they have a powerful influence on how learners come to perceive themselves. This in turn, impacts on their abilities to take advantage of the educational opportunities offered. Therefore, in any process of curriculum change, the dilemma of doing (new) things with old mindsets and old materials is apparent (Hoadley and Jansen, 2002:192).

It is Hoadley and Jansen view that curriculum cannot be limited to the official definitions of what to teach or to a single definition of what is a curriculum. They argue that the curriculum should be seen as a process, which includes the explicit, and the implicit curriculum – not planned, sometimes not intended but all the same learned. The implicit curriculum can be broken further into the covert and the hidden curriculum Hoadley and Jansen (2002:40). According to Hoadley and Jansen, schools may put emphasis on things that they have been doing for generations that they continue to teach as though that is the way things should be- naturalized values. The importance of being aware of the hidden curriculum is, according Hoadley and Jansen (2002:44), that it can be sometimes more powerful than both the explicit and covert curriculum thereby entrenching traditional beliefs than enabling students to make critical assessment of issues in the environment. Further, they argue, students are taught values and ideas, which they perceive to be natural and thus cannot be questioned.

In education, argue, Hoadley and Jansen, the hidden curriculum manifests itself in the organization of space time and time. They argue that school's spatial design carries with it assumptions about learning, which make easier regimented, disciplined learning and hierarchical teaching and less so the informal, learner centred teaching.

The amount of time allocated differentially to various subjects suggests that certain kinds of knowledge are valued more than others. Where knowledge is compartmentalized into short period i.e. forty minutes of a subject, it is difficult for learners to develop thinking that is critical and holistic.

Hoadley and Jansen (2002:45) suggest that the covert curriculum can be used to socialize students in to a system and teach them how to question it. They suggest that teachers should teach the implicit socialization more knowingly than by happenstance.

Others argue that the curriculum reflects the culture in which it operates- that the choice of what to teach and what not to teach is based on what is valued in that society. This group argues that although the authorities who design the curriculum have good intentions towards what young people should learn, the knowledge that is finally included in the curriculum plan always tends to privilege some people and disadvantage others (Hoadley and Jansen, 2002:48, Conrad: 1978).

2.3.1 Producing a Curriculum

Hoadley and Jansen (2002:59) have identified three key factors that determine various approaches to the production of a curriculum.

- Who should be involved in producing curriculum plan?
- How should it be decided on what knowledge to include in the curriculum plan?
- Why should some knowledge and not other knowledge be taught?

Hoadley and Jansen (2002) use research and work done by three prominent theorists on curriculum to illustrate the various approaches to the subject.

The first is Ralph Tyler whose view of curriculum is classified as technical or product approach. Tyler, addresses curriculum using what he terms as four basic questions.

These are as follows:

- Purposes: Aims and Objectives
- Content to be taught
- Organization and Teaching Method
- Assessment and Evaluation

Stenhouse has criticized Tyler's view of curriculum as being too technical and too prescriptive (Hoadley and Jansen (2002:61). As such, it limits and restricts teachers.

Stenhouse suggests, as the second approach, that curriculum should be view as a process. Such a view provides teachers with ideas or proposals from which they can interpret rough guides to their context. Stenhouse argues that the curriculum must not specify the anticipated outcomes. Teachers, according to Stenhouse should be allowed to be active participants in the curriculum process than simply be transmitters of knowledge from experts.

The third approach is one by Paulo Freire where he argues that the curriculum should be driven by political rather than technical questions. In Freire's view the curriculum content should be drawn from students' lives and be developed with them (teacher and students) in an interactive and critical manner, which would lead to empowerment of the students (Hoadley and Jansen. 2002:73, Freire.1993: 61).

Stenhouse and Freire argue that Tyler's technical approach view is too simplistic, encourages passive learning and omits the context of learning. While Stenhouse and Freire generally agree, Stenhouse advises restraint as to the degree to which the political context should influence the curriculum. He is wary that actual learning might be reduced if political context is overemphasized.

The merit of the above approaches is in their illustrations that behind every curriculum are values and assumptions which teachers and learners should be aware of. As Hoadley and Jansen (2002:70) conclude, it is not which approach is bad or good, but it is to be aware when such an approach could be used effectively to educate that is really critical. Anyone who examines a curriculum should be able to discern the values and understandings that underpin it.

2.4. PHILOSOPHICAL FOUNDATIONS OF CURRICULUM.

Curricula and their design are the construct of their social economical and political era. Curricula are not free from power struggles inherent in any society as observed by Bernstein in Van Loggerenberg (2000:2) in the quote:

How a society selects, classifies, distributes, transmits and evaluates the educational knowledge it considers to be public, reflects both the distribution of power and the principle of social control.

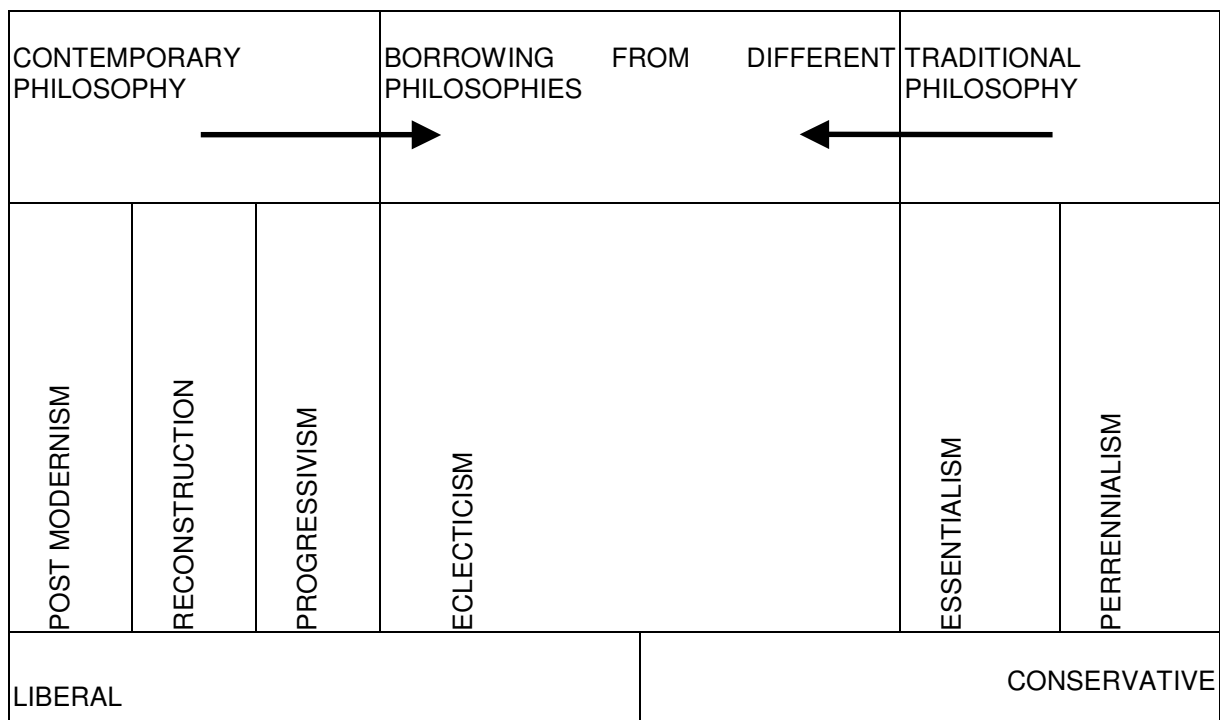
Many curricula philosophies have reflected in their educational processes the specific modes of societal control and reproduction of particular respective historical paradigms.

As such Van Loggerenberg (2000:2) states that educationists and curriculum planners face many controversial issues in designing curricula for society. In South Africa, these problems are acknowledged by the NEPI Report (1992) that states:

There are, therefore, important social and political dimensions to the curriculum. The way in which knowledge is organized in the school curriculum is a social activity, which produces a social product. It is drawn up by particular groups of people; it reflects particular points of view and values; it is anchored in the experiences of particular patterns of success and failure. Viewed in this way, the curriculum can never be neutral or removed from the patterns of power.

As educational and curriculum reform begins the process of changing the nature of the South African society, some writers stress the importance of understanding the many different underlying philosophies on which rest curricula.

Van Loggerenberg (2002:3) suggests a classification of philosophies on a continuum varying from traditional to the contemporary era as shown in Figure 2.4-1 below.



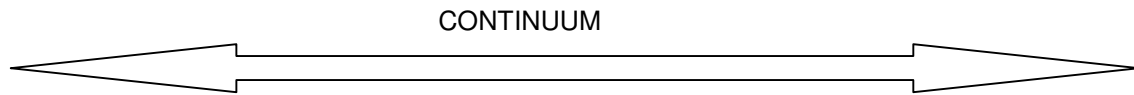


Figure 2.4-1: Summaries of educational philosophies underpinning curriculum. (Source: Loggerenberg, 2000: 4)

In this classification the liberal philosophies reconstruction and post-modernism occupy the left, and the conservative philosophy, perennialism on the right while progressivism and essentialism occupy the mid-section between the two extremes.

A short description of each philosophy is given below to elaborate on the concepts underlying the continuum shown above in Figure 2.4-1.

2.4.1 Perennialism

Perennialism is the oldest of all educational philosophies whose central ideas are the disciplining of the mind and the power of reason based on universally agreed upon knowledge. In this philosophy the curriculum is subject oriented with the teacher being the ultimate possessor knowledge with the power to transmit it to the students (Van Loggerenberg 2000:4). Knowledge is based on absolute truth and based on the past.

2.4.2 Essentialism

This philosophy resulted in curricula that were based on cognitive and intellectual essentials. It emphasized development of the scientific aspects of learners or students, and less of their artistic and athletic development (Van Loggerenberg, 2000:5). Unlike perennialism, which is preoccupied with the past, essentialism focuses more on contemporary issues with preservation of culture heritage as bases of truth and knowledge. Here the learner is cast into a passive role receiving and awaiting stimuli from the teacher.

2.4.3 Progressivism

Progressivism challenged the emphasis on subject content in education as in the perennialists and essentialist's view of education, and replaced that with the importance of the learners' experience of education. How to think became more important than what to think. John Dewey led the progresivists school of thought. The progressivists or pragmatists perceive truth as relative, changing and incomplete and seeks methods of achieving truths. One popular pragmatist method of seeking truth is the scientific methods of problem solving.

2.4.4 The relevant curriculum

One of the examples of the progressive curricula is the relevant curriculum introduced in the 1960s as a learner-centred approach (Van Loggerenberg, 2000:6). Some of its objectives were to make learners take more responsibilities. Its features were as follows:

- Revised and new courses incorporating learner interests and problems
- Educational alternatives, electives, mini courses and open classrooms
- Relaxation of academic and admission standards
- Individualization of instruction by means of independent study and special projects.
- Extending of curriculum beyond four walls of the classroom by means of working programmes, credit for life experiences and off campus courses.

Though the intentions of the progresivists were good, problems identified with such curricula were that it was too disorganized and difficult to evaluate as compared with the essentialist curricula (Loggerenberg 2000:6).

2.4.5 The Humanist curriculum

According to Loggerenberg (2000:6) the other progeessivist curriculum that evolved was the humanist curriculum that sought to attend to the personal and social aspects of instruction. Curriculum activities and teaching methods which are associated with this approach, include the following:

- Learning opportunities (lessons/lectures) based on real life experiences.
- Field trips and group projects
- Artistic endeavors and dramatization
- Homework and tutoring centres
- Co-operative, independent and small group learning as opposed to large group competitive teacher dominated learning.

Critics of humanistic curriculum, according to Loggerenberg (2000, 7) claim it lacks educational excellence and academic productivity.

2.4.6 Reconstructionism

This school of thought on curriculum and education views this philosophy as appropriate for a society in crisis. It views the teachers as important agents of change for a new order and defines a curriculum content that represents controversial national and world problems and social issues as unemployment, poverty, housing and health needs as an attempt to solve these global needs Van Loggerenberg (2000, 7). This curriculum philosophy is also known as reconceptualism.

2.4.7. Modernism

The modernist philosophy perceives curriculum as knowledge that has been functionally organized with distinct patterns of specialization. Its origins are a heavily industrialized society that emphasizes control of the individual who has little say in what they are doing. Cheng-Man Lau (2001:32) identifies four characteristics that typify such a curriculum. These are purposes, experiences, methods and evaluation, all of which are arranged in a logical and sequential manner. While it seems to be well thought out and planned, Cheng (2001:33) points out that this model is fraught with problems and the fact that it is a popular model, because of its simplistic nature, has only served to mask some negative features in the process of curriculum development (Cheng. 2001.34).

Cheng concludes that the modernist curriculum only serves the needs of the planners- the financially and politically rich. Modernist curriculum development is as such a symptom of such skewed power distribution.

2.4.8. Post-Modernism

Post-modernist philosophy of curriculum is described as having multiple causes. Concepts of unity, certainty and predictability are replaced with emergent, fluid, chaotic and pluralistic factors that create new meanings. While modernists are concerned with effectiveness, rationality and measurable certainty, post modernists value affectiveness, problems, emotions and uncertainty. Cheng (2001:36) defines postmodernism as being organic, fluid, flexible and interactive in contrast to the mechanistic characteristics of the modernism.

Spector and Hellemans in Van Loggerenberg (2000:8) outline the characteristics of a post-modernist curriculum as follows:

- A reduced amount of content loaded with detail. A basis for general formative education is focused on the mastering of general competencies and fundamental relationships in real life.
- The rigidity of traditional subject content is repealed in favour of the immediate supple integration of any new knowledge and /or processes in the curriculum to make it immediately relevant.
- Traditional disciplinary boundaries will be blurred in favour of integration, co-ordination and inter-relatedness of concepts. The emphasis is on holistic concepts and conceptual frameworks.
- Science will be portrayed as a dynamic field challenging established truths. Scientific activity is regarded as a human activity, which is responsive to human and societal perceptions and needs. Science is no longer viewed as mechanistic, impersonal and ultimately objective.
- Because of the integrated and inter-related nature of reality, content will rather be organised around themes and problems, than around the structure of a single discipline.
- The curriculum will be sensitive to the values of multiple cultures, races males and females and will allow for different learning styles.
- The curriculum will devise co-operative and collaborative learning experiences that will discourage a teacher-centered and teacher-dependent attitude. It implies a break away from a textbook and lecturing approach to an activity-based hands and mind approach.

Slattery in Van Loggerenberg (2000:9) describes the basic ideas of post-modern curricula as:

Curricula in the post-modern era emphasize discourses that promote understanding of the cultural, historical, political, ecological, aesthetic, theological, and autobiographical impact of the curriculum in the human conditions, social structures, and ecosphere rather than the planning, design, implementation, and evaluation of context-free and value-neutral schooling events and trivial information.

Understanding the meaning of post-modernist concept entails contrasting with the preceding period and marking the changes that define the passing moment. Nondescript developments and directions characterize postmodernism but what is certain is that it is seen as providing answers to the failures of the preceding rational concepts.

Further, other writers like Cheng (2001:37) and Doll (1993) suggest that a postmodernist curriculum has within it the following characteristics:

- The curriculum has to ground theory in and develop in practice. Teachers and learners develop their own curriculum through continuous interaction.
- The curriculum needs to enhance self-organization by being rich in diversity, problematics and heuristics, and a classroom atmosphere, which encourages exploration.
- The curriculum has to empower both teachers and learners, thus creating an environment where they can engage in constructive dialogue.
- The curriculum should encourage interpretation, rather than explanation of knowledge.
- The curriculum should adopt developmental planning, which allows for greater flexibility and modification.

Evaluation will be an interactive process, in which feedback is provided to the learner. Communities' support is required to help the learners through constructive critiques.

It can be seen that the ideas of a post-modern curriculum are similar to the character of the transformational OBE curriculum. Therefore it would seem appropriate to adopt the post-modern philosophy to education and curriculum of South Africa. However doing so might result in curricula that does not recognise that education and curricula just as society are in a state of continuous change. It would therefore seem, as Cheng (2001)

and Van Loggerenberg (2000:9) suggest, that an eclectic approach to education and curricula is appropriate and more capable of addressing the needs of an eclectic, pluralistic, high tech-information led society that are characteristic of South Africa.

2.5. INTEGRATED AND COLLECTION TYPE- CURRICULA

Ensor (in Breier. 2001:110) states that two types of curriculum approaches can be distinguished based on classification of curriculum content. Classification in this respect relates to the structuring of knowledge based on the division of labour and the strength academic identities. It is not the comparison of curriculum content. Weak classification means the content is less insulated. Strong classification means a well-defined body of knowledge and protected course content. The two categories are as follows:

2.5.1. Collection type curricula

Content well defined, and well insulated from each other. This reflects a curriculum structure that is made up of subjects that are strongly insulated against each other. Student choice of programme is generally limited.

2.5.2 Integrated type curricula

Classification boundaries are weak and the content stand in relation to one another. Its objective is to create new course programmes by combining many disciplines into single identifiable ones, based on some organizing concepts. Integrated curricula aim to give the students more programme choice.

2.6. A SYSTEMATIC APPROACH TO CURRICULUM CHANGE

Conrad (1978: 2) argues that any attempt to change a curriculum must be done using a systematic approach because curriculum consists of numerous interdependent parts. This, he argues, is to avoid unintended outcomes in what might otherwise be well-intentioned curriculum innovations. Any new innovation in a curriculum, Conrad contends, has many consequences, which can only thoroughly be addressed if a systematic approach is adopted.

Conrad (1978:10) has suggested that curriculum review requires a systematic approach. To this end, Conrad proposes a three-step framework that consists of: Choosing an Organizing Principle; Establishing Curricular Emphases; and Building a Curricular Structure as shown in Table 2.6-1 below:

Table 2.6-1 Conrad's Three Step Framework for Curricula Analysis.

<p>Step 1</p>	<p>Choosing an Organizing Principle Academic Disciplines Student Development Great Books and Ideas Social Problems Selected Competences</p>
<p>Step 2</p>	<p>Establishing Curricular Emphases Four Continua Locus of Learning: Campus Based Classroom Learning----- Experiential Learning Curriculum Content: Breath -----Depth Design of Program: Faculty-----Contractual -----Student Flexibility of Program Required-----Distribution ----- Elective</p>

<p>Step 3</p>	<p>Building a Curricular Structure Requirements for total degree program, probably including general education, concentration, electives.</p> <p>Alternative degree programs, including accelerated degree programs, external degree programs, and student-designed programs.</p> <p>Arrangements for concentration, including disciplinary majors, student-designed majors, career-orientated majors.</p> <p>Components of general education, including core programs, interdisciplinary programs, competence-based programs, freshman seminars.</p> <p>Experiential learning opportunities, including work-learning and service-learning programs, cross cultural experiences, academic credit for prior learning, and individual growth opportunities.</p> <p>Calendar arrangements, including daily, weekly, annual schedules as well as modular and interim arrangements.</p> <p>Formal and informal structural arrangements for learning, ranging from traditional classrooms to cluster colleges and living-learning centres.</p> <p>Individual course experiences, including the number and subject area of courses to be offered.</p> <p>Overall course structure, ranging from structured classroom courses to seminars and independent study.</p> <p>Methods of student evaluation, ranging form grades and comprehensive examinations to written evaluations and external assessment</p> <p>Selection and advising of students</p> <p>Administrative and financial responsibilities for organizing and managing the curriculum</p>
----------------------	--

2.6.1 Academic Discipline As an Organising Principle

This refers organizing a curriculum based on the way in which the great thinkers like Aristotle have conceptualized knowledge (Conrad: 1978:17). This has resulted in knowledge being classified into three: theoretical disciplines (mathematics, natural sciences), the practical disciplines (ethics and politics) and productive discipline (fine arts). Conrad (1978:19) further argues that in the contemporary world's perception, knowledge is better organised, communicated and understood if it is organised on the basis of disciplines. The proponents of this principle argue that curriculum should be organised on the basis of discipline and their resultant departments.

In terms of emphasis such a curriculum according to Conrad emphasizes a campus based, faculty controlled program whose strengths is that it a widely accepted epistemology, which allows students to transfer easily and can be efficiently organised. It is criticized for

its rigid boundaries and specialized language, which hampers application of knowledge to contemporary problems and the widening of basic research (Conrad.1978: 21). This, according to Conrad, is the most widely used organizing principle of curricula in most undergraduate programs in the USA.

2.6.2 Student Development

Proponents of this view, see the development of the students as persons as the main organizing principle of curriculum. Its aim is to cultivate students' interests and needs by integrating their emotions and feelings with their cognitive and intellectual capacities. Proponents argue that undergraduate curriculum organised on this principle of student development should enable allow students to find out who they are and where they might be going (Conrad.1978: 23). Such a curriculum would be characterized by increase flexibility, independent study and most likely be student designed.

While this type of curriculum may seem to be student friendly it is criticized of placing little attention to the acquisition of knowledge and being somewhat luxurious. Other arguments state that these types of curricula give more freedom to students who in reality must be getting more guidance at this level (Conrad.1978.30).

2.6.3 Great Books and Ideas

Those that advocate for the great books principle as the basis of curriculum in higher education argue for the pursuit of knowledge for its own sake- a liberal education. They argue that undergraduate curriculum that is based on the requirements of graduates and professional schools or the ever evolving conditions of employment sector of the contemporary world has led to the consolidation of academic disciplines and diminished the role of liberal education (Conrad1978: 27).

The great books proponents argue that by studying the wisdom of a selected great books known as classics, humans, can be able to address the problems of the contemporary world because the substance of the problems do not change (Conrad.1978: 28). They contend that discipline based learning promotes fragmentation of the students attention and problems instead of providing an opportunity to address perennial problems of mankind.

Its main advantages are the integrated manner in which such a curriculum is organised and the excellent foundation it provides for further studies. Its drawbacks however include its failure to include new developments in the study of the classical volumes

given the rapid change in knowledge. Further the great books principle is perceived to have a backward focus than the present and future looking. Its critics contend that a curriculum based on great books, apart from being a rigid program, it favours humanities than the sciences and its focuses on Western Civilization at the expense of intellectual contributions from other non-Western cultures. Finally a great books curriculum program, while providing an exciting program does not ensure job-readiness for its students as other institutions may do. Still it is seen as a possible alternative to discipline based curriculum (Conrad1978: 31)

2.6.4 Social Problems

Proponents of this view argue that education must be used to solve societal problems. Normally such curricula, which integrate education with social responsibilities, would be organised based on themes such as environmental problems, urban problems, or world order (Conrad1978: 32). These programmes abandon traditional curricula organization based on disciplines. The main advantage of using social problems to develop a curriculum is that it provides a powerful motivational force for students to pursue their studies. Students have the opportunity to design their own programs with the possibility of linking disparate aspects of knowledge into a holistic program (Conrad 1978: 34). Such a curriculum is forward looking- the opposite of the great books approach.

Critics of this approach, according to Conrad (1978:35) argue that using the social problem principle to formulate a curriculum makes the education process “value –laden” and not “value-free” as would the case be in liberal arts education. Further they contend that such a program that is predisposed to problem-solving runs the risk of being too practical which according to them is only a component of what should constitute education. There is a real risk of the social problems approach being narrow in focus. Even then, the social problems approach provides an alternative principle for organizing a curriculum.

2.6.5 Selected Competences

The premise on which advocates of this approach base their support is that they describe what the graduates are capable of doing upon graduation- what competences should they possess? The competences are clearly defined for the students as well as the process the student must follow to achieve those competences. Conrad (1978:37) lists three critical elements of a competence-based curriculum. These are as follows;

- Identifying the competences

- Facilitation of students' progress to achieve the competences
- Developing adequate process for evaluating competence.

This approach provides for a whole range of possibilities for the curriculum that can include experiential learning as well as classroom learning. Further this approach provides for recognition of prior learning and a flexibly student-design program. The competence approach provides publicly accountable curriculum that explicitly defines what the education objectives are and how they will be assessed. Time ceases to be the major evaluative mechanism for students. But its critics argue that measurement of competences is a complex procedure and can be inadequate in measuring the dynamic process of education (Conrad 1978:43). In this process, critics argue, there is a danger of students only acquiring the prescribed skills than acquiring a well-rounded education.

Conrad concludes that each of the five principles of organizing curriculum has its own advantages and disadvantages. Their importance, however is that the five principles can be used to analyse and design various approaches undergraduate education (Conrad. 1978.43).

Conrad's (1978:49) systematic model for curriculum can be used in the following four ways:

- As a device for analyzing existing higher education curriculum
- To compare and contrast alternative curricular arrangements
- Used as a heuristic device to think of curricular implications of curricular arrangements of the future.
- To help planners to construct integrated curriculum, which is based on, specified organizing principle and selected curricular emphasis.

2.7. ECLECTIC APPROACH TO CURRICULUM REVIEW

As a principle, an eclectic approach refers to the borrowing of ideas from existing philosophies as dictated by context and the philosophy relevant to a particular era. An eclectic approach to education and curricula in South Africa, is suggested in this study, would seem to be an appropriate approach given its' diverse and complex societal composition.

To establish the responses of the schools of architecture to the new regulations established under the SAQA Act and stipulated by NSB 12 sub-field, the next section examines the curricula of schools of architecture in South Africa. Further this part of the study would indicate the origins of change in curricula. Initially the study included the examination of all the six schools of architecture in South Africa, but in the end, only five schools formed part of the study. The five schools were Cape Town, Free State, Wits University, Port Elizabeth and Pretoria. The Durban school of architecture was omitted from the study because of difficulties to accessing their latest information and their unwillingness to allow the researcher access to their documents.

The information was gathered from brochures, timetables, school handbooks, university yearbooks, NSB 12 regulations and latest Accreditation Reports. Unstructured interviews with all Heads of Departments were also conducted in order to establish the contemporary vision of each school as conceived by the head of school.

There is not a standard method of analyzing a curriculum. Further, because the discipline of architecture does not comprise strictly of a single discipline, adapting a single method of analyzing its curriculum may overlook some of its salient characteristics. This study accepts these limitations. However in this study the method suggested by Conrad (1978:44), as discussed above, has been chosen as the main tool for analysis because it provides a complex and comprehensive framework for analyzing a curriculum, by using multiple factors, which include choosing the organizing principle, establishing curricular emphasis and guidelines for building a curricular structure. The second reason for using Conrad's method is that it was designed for liberal studies programmes, which are historically programmes that have had their domain within the university context. Liberal studies, traditionally, define what ought to be taught in the universities as opposed to other courses that are vocational in orientation. Additional ways of analyzing a curriculum such as that posited by Ensor (in Breier, 2001:94) have also been provided to broaden understanding of the process. The format for the analysis of each school is undertaken in the following manner.

Firstly the curriculum structure of each school is displayed in a diagrammatic form. This shows in general, the types of programmes that are offered at each school and the module titles of each module in every year. It also shows the focus of study in each year. Secondly each school's curriculum is analyzed using the SAQA regulations as described by NSB outcomes. Each NSB outcome is aligned to module(s) and is an indication of how much time a school wants its' learners to spend time on a particular module or outcome. It must be stated that because of difficulties of aligning outcomes with modules

taught by schools the second professional programmes, the higher degree curricula were not analyzed in the same manner as the first technologists' programmes offered by architecture schools.

Time dedicated by a school to a module indicates the rigour and extent of importance to which, that knowledge is held by the school for the learners to acquire. Thirdly each school's curriculum is analyzed using Conrad's (1978:11) framework for curriculum planning that includes five principles of organizing knowledge and establishing curricular emphases. Fourthly each school's Accreditation Report is analyzed to establish the main thrust of change in schools of architecture as suggested in these reports.

It must be said that these methods of analysis are not exhaustive in themselves but they help to formulate a clearer picture as to the origins of knowledge in architecture education and as well identify the major contributors to the dynamic process of change in their curricula. Lastly each school's curriculum is analyzed on how well its modules are integrated i.e. either vertically or horizontally. This reflects how each school has organised its knowledge.

2.8. UNIVERSITY OF CAPE TOWN

2.8.1 Bachelor of Science /Architectural Studies –3/2 Degree Structure

The first degree offered at University of Cape Town is the three-year Bachelor of Architectural Studies programme, which according to SAQA regulations and SACAP stipulation qualifies the graduates of this programme as candidate Architectural Technologist. This school offers the B Arch Hons degree if the learners complete an additional year of practical work and a research assignment. The third degree is the professional degree Bachelor of Architecture that is awarded upon completion of a further two years of study and qualifies the graduates as candidate architects. Figure 2.8-1 below shows the curriculum, degrees structure and content for each of the degree programmes as well as the learning objectives of each year.

Pre-Professional Degree
 Bachelor of Science /Architectural Studies – University of Cape Town-2002
 University of Pretoria etd – Saidi, F E (2005)

1 ST YR	Core Course: Studio Work 1 Building Construction Non-Core Courses: History and Theory of Architecture Graphics and	Core Course: Studio Work 1 Building Construction Non-Core Courses: History and Theory of Architecture Environment 2 Graphics and Communication 2 Theory of Structures 2	FOCUS Concepts, Skills, techniques and productive methods Urban Context Design methods and Computer applications Integration of design and technology Awareness of South African Context Team working Decision-making. Introduction to Settlement Planning and Design
2 ND YR	Core Course: Studio Work 3 Building Construction 3 Non-Core Courses: History and Theory of Architecture 3 Environment 3 Graphics and Communication 3 of Structure 3	Core Course: Studio Work 4 Building Construction 4 Non-Core Courses: History and Theory of Architecture 4 Environment 4 Graphics and Communication 4 Theory of Structure 4	
3 RD YR	Core Course: Studio Work 5 Building Construction 5 Non-Core Courses: History and Theory of Architecture 5 Introduction to Practice Introduction to Settlement Planning & Design Theory of Structure 5	Core Course: Studio Work 6 Building Construction 6 Non-Core Courses: History and Theory of Architecture 6 Theory of Structures 6	

Bachelor of Architecture – Professional Degree
 Studies

4 TH YR HONS	Core Course: Studio Work ARCH 3 Non-Core Courses: Professional Practice 2 Electives Natural Systems History and theory of Landscape Architecture A Planning Techniques 1 History and Theory of Architecture Advanced Construction Management for Architects Aspects of History and Theory 1 Aspects of History and Theory 2 History and theory of	Core Course: Studio Work ARCH 4 Non-Core Courses: 3 Electives Urban Development Process Planning and Government Systems Regulatory and Legal Framework Planning Techniques 2 Landscape Design Terrain Analysis History and Theory of Architecture Advanced Construction (Research) Aspects of History and	At least six months Office work, fieldwork, Study Travel or building work. Work Report or Photographic Essay Housing and Urban design- Contemporary city issues: to find solutions to city's issues. Simulated Office work. Community group work.
PREQ: B.A.S or equivalent + portfolio 4 TH YR BARCH 5 TH YR BARCH H ARCH	Studio Work Arch 5 + 3 Electives (form first semester above)	Studio Work Arch 6 + 3 Electives (from 2 nd semester above)	

Figure 2.8-1. Cape Town Curriculum. Source: 2002 University of Cape Town Handbook

2.8.2 Outcomes

Table 2.8-1 below gives an indication of the content response of the architecture programmes at UCT to the outcomes demanded by SAQA under its NBS regulations. The development levels refer to competence and complexity levels described by the school, which a learner would have to acquire in order to attain the minimum competence of the desired outcome.

In Table 2.8-1 below it can be observed that the traditional modules in architecture curricula like Drawing, History, Construction, Design and Structures, have a lot of time and modules dedicated to them and thus the NSB outcomes that demand these requirements have been easily met. Information Technology also receives a fair proportion of time. Outcomes like competence in Teamwork, Verbal communication do not have specifically developed modules. It is thus difficult to access the whether the teamwork or verbal communication are emphasized as important knowledge for architects. The legal outcome only has two modules, which indicates that at the Cape Town University School of Architecture, the level of legal competence required by architects can be achieved in two semesters.

Table 2.8-1 Cape Town University Outcomes

NBS OUTCOME	Associated Course	Developmental Level
To communicate effectively in drawing, writing and verbally clients	Graphics and Communication	4 developmental levels
To be aware of the impact of architectural activity on society and the environment	Environment	4 developmental levels
To be aware of the role of architectural history	History and Theory of Architecture	6+4 developmental levels
To be competent to work efficiently as an individual, in teams and multidisciplinary situations	"According to theme for the year"	2 developmental levels
To use and apply information technology	Graphics and Communication	4 developmental levels
To interpret and apply legal principles within the context of the built environment	Introduction to Practice Regulatory and Legal Framework	2 developmental level
To be competent to apply knowledge of design, construction, materials, structure and procedure from the first principles to complex	Studio Work Building Construction Theory of Structures	6 + 4 developmental levels (Construction) 7 developmental levels (Structures)

architectural solutions		
To be competent to collect relevant information necessary for a thorough analysis of an architectural proposition	Studio Work	6 + 4 developmental levels
To be competent to synthesize collected information and produce creative procedural and non-procedural design solutions for an architectural project.	Studio Work	6+ 4 developmental levels (Design)

2.8.3 Curriculum Organising Principle.

Using Conrad's (1978) framework for curriculum planning, a school's curriculum can be examined and assessed to establish the fundamental curriculum organizing principles. Table 2.8-2 below shows the elements of the curriculum framework for Cape Town University to include the following:

Table 2.8-2 Cape Town University Curriculum Organizing Principles

Academic Disciplines	The dominance of the design studio is evident by the statement in the School Handbook (2002) that "studio programmes absorb about two-thirds of students' time and energy. The undergraduate curriculum is a typically traditional one that gives prominence to Studio and Building Construction by designating them as core courses. Other courses are designated as "Non-core courses" but which learners must complete in order to graduate. Curriculum reflects the focus of the programme: providing grounding for entry into a professional architectural course or post graduate programmes in city and regional planning, urban design or landscape architecture.
Student Development	Development of students' personal skills in the undergraduate programmes is not explicit and may be learnt implicitly in the informal talks that learners get from their lecturers. It is clear that student development is not the main organizing principle. The integration of feelings and emotions into intellectual and cognitive development is left to be developed by the learners. Mention is made in the handbook of the skills to be acquired by a learner and not the development of a learner as an individual. The second degree B.Arch has elements of developing the learners as persons who can tackle problems imaginatively, think rationally and are able to use self-initiative within the discipline.

Great Books and Ideas	The bulk of the curriculum shows course content that is applicable to the practice of architecture. Courses are designed for specific application to the professional than as solution of the general problems of humankind as the school handbook states that “ the degree has stature in its own right for entry into the job market in architectural or other design and planning offices, interior design,” landscape architecture, property development in the building industry. The second degree has some semblance of the great books idea because of the method of learning, which include seminar and discussion groups that are two main modes of knowledge transmission in the Great Books and Ideas principle.
Social Problems	The architecture courses at UCT are not built around broad problems- physical or social environmental in the first degree (BAS) but are built in preparation for entry into either the profession or any related professional design programme i.e. planning, interior and landscape architecture. The higher degree B. Arch consist of electives that a learner may pursue if interested in understanding issues of the South African context. Because of its location in the urban area, the school has adopted as its general approach the study of Cape Towns’ urban issues and problems. Thus in this higher degree local issues have become the focus of the studio programmes according to the HOD (J. Noero: personal communication, October 2003).
Selected Competences	Cape Town University has rewritten its curriculum according to the SAQA outcomes. But in the handbook there are no indications as to which courses address attainment of particular outcomes. As such selected competences cannot be regarded as the main organizing principle of the curriculum.

2.8.4 Establishing Curricular Emphases

Table 2.8-3 Cape Town University Curricular Emphases

Locus of Learning	Campus based learning is the main mode of learning in the undergraduate programme. In the second degree B.Arch the first year is left for experiential learning outside the university. The handbook states that six months of the time must be spent in an architect’s office and at least another six months on travel.
-------------------	---

Curriculum Content	Breadth in the programmes is expressed in the wide range of courses that learners take in both the undergraduate and postgraduate programmes. Depth is mainly seen in the history and theory courses that are offered as mandatory course-modules for the whole duration of the undergraduate and postgraduate programmes.
Design Programme of	Faculty designs all the programmes. The first degree has no options by way of electives. The second degree-, B.Arch, offers some options by way of electives
Flexibility of Program	Flexibility is non-existent in the BAS degree and a minimal amount by way of electives in the B.Arch degree. Choice of where to work and travel in the first years of the B. Arch programme is also very restricted. But where flexibility is allowed it can also be said to be rigid because faculty prescribes the choice of electives from which a learner can select.

2.8.5 Accreditation Boards: Comments on the Curriculum

The discussion below is derived from the latest report of the SACAP, RIBA and CAA Joint Visiting Board to the School of Architecture at the University of Cape Town of 2001.

Bachelor of Architectural Studies Programme

Studio Work

The accreditation board noted that the BAS programme utilizes the traditional methods of representation while the potential of using Information Technology in the design studio had only partially explored.

History and Theory

It was the view of the accreditation board that in the initial years of learning, problems associated with Theory and History course-modules initially stemmed from the learners inadequate level of literacy and inability to pass critical judgment of relevant issues (Cape Town Report of 2001). This improved as the learners progressed to the higher years.

Bridging the gap between theory and the making of design was cited as a problem and is exemplified by the statement in the accreditation report that: *“Compartmentalization of areas of knowledge seems to be perennial problem in the schools of architecture”* (Cape Town Report of 2001:7).

Construction Technology

This subject consists of six modules that are well articulated in terms of structuring and delivering of knowledge to the learners. Although the school recognizes the importance of technological issues, the Accreditation Report notes that, it does not have a strategy to articulate to its learners the role of technology in the overall programme. It can be said that while construction technology in the BAS programme has attained coherence as a topic in terms of disciplinary knowledge, it has still not achieved horizontal coherence with other course-modules or more importantly for architecture; it has not been integrated into the Design Studio.

Structures

The accreditation board commended the school's non-numerical way of teaching structures through its seven modules. This was seen as a successful method of teaching and learning structures as students could readily apply their knowledge of structures to the design studio. This view reaffirms the accreditation boards' tendency to emphasize applied cognacy over the academic cognacy.

Graphic and Communication

Although a close link between graphics course and the Design Studio exists, the board noted that learners did not seem to use the knowledge gained from the graphics classes. Communication by way of freehand images and explorations are rare, as is colour and computer application, which appears to be little utilized. The accreditation report states that lack of integration of the graphics methods of presenting and exploring ideas into design studio had resulted in bland and less sophisticated designs being produced by learners.

Professional Practice

The structure allows for two mandatory modules with regards to professional practice. The third module is an elective. The accreditation board found the course-module method of delivery by lecturers to be inadequate and suggested that more use should be made of seminars and case studies. Making Management for

architects an elective was not acceptable to the board and they suggested that it should be made a required course, obviously reflecting the boards' emphasis on the acquisition of professional competence in schools of architecture, before graduation.

Housing

The accreditation board found that because of limited time allocated to learning of housing, superficial exploration of housing issues had been the result. The module is allocated two credits. A review of content and credit allocation to the housing modules was suggested by the Accreditation Board, in the light of the School's philosophy that is built on solving the problems of an increasingly urbanite population of Cape Town, if this goal is to be attained.

Bachelor of Architecture Programme.

Studio Work

The elective nature of the design programme, though a promising concept did not yield the desired results as learners concentrated on peripheral issues than design integrated with building technology.

Electives

These modules were found to be lacking in breath and depth. Electives also contributed to learners working in isolation and loss of opportunity for meaningful debate amongst peers. The accreditation board declared that learners' research did not seem to have informed the design electives.

Student Comments

Learners stated that they still needed individual crits while the staff and head of school were of the view that days of individual crits are long gone. Because of this, an apparent tension exists in the school, with learners thinking that staff is not performing according to contractual duties.

2.8.6 Summary

Cape Town University architecture programmes reflect an integrated type of curriculum that has been structured with strong vertical coherence of the modules from the first to third year level and subsequently in the B.Arch programme. There is therefore consistency in the descriptions of the core modules i.e. Studio Work and Building Construction and the non-core modules– History and Theory of Architecture, Environment, Graphics and Communication and Theory of Structure– through the years, which can only mean that the contents of the modules are well articulated between the years to enable learners, acquire the prescribed level of competency at various stages of their studies.

Horizontal coherence though desired by the school, has been difficult to achieve as noted above in the Accreditation Report. Learners especially in the first programme do not exhibit the ability to integrate the knowledge gained from theoretical or support modules to the Design Studios, which are the most important modules as, indicated by the high credits allocated to them.

Flexibility –choice of modules– is offered to the learners in first and second year of the B Arch programme by way of electives. The BAS programme offers core and non-core modules but offers no choice as to what field learners may want to specialize in.

The curriculum also exhibits a strong inclination towards applied cognacy as indicated by the by the modules that are designed to relate to architecture practice. This view is reinforced by the demand of the Accreditation Boards that modules like Management for architects should not be electives. Making Management a required module means that learners have less time to pursue other academic modules. It has the hidden assumption that all architecture graduates would end up in a practicing office where management will be more relevant.

Cape Town universities' architecture curriculum also responds to the regional context by including housing and urban studies that address the region's urban problems. In that way, the Head of School argues (J, Noero: personal communication, October 2003) that their curriculum achieves relevance.

On the whole the Cape Town curriculum is a traditionally integrated type that is predominantly oriented towards producing graduate for practice. It has positioned itself well to be relevant in the Western Cape region.

2.9. UNIVERSITY OF FREE STATE

2.9.1 Bachelor of Science /Architectural Studies –3/2 Degree Structure

The first degree offered at Free State University is the three-year Bachelor of Architectural Studies programme, which according to SAQA regulations and SACAP stipulation qualifies the graduates from this programme as candidate Architectural Technologist. The second degree is the professional degree Bachelor of Architecture is awarded upon completion of a further two years of study and qualifies the graduates as candidate architects. Figure 2.9-1 below shows the curricular structure and content for each of the degree

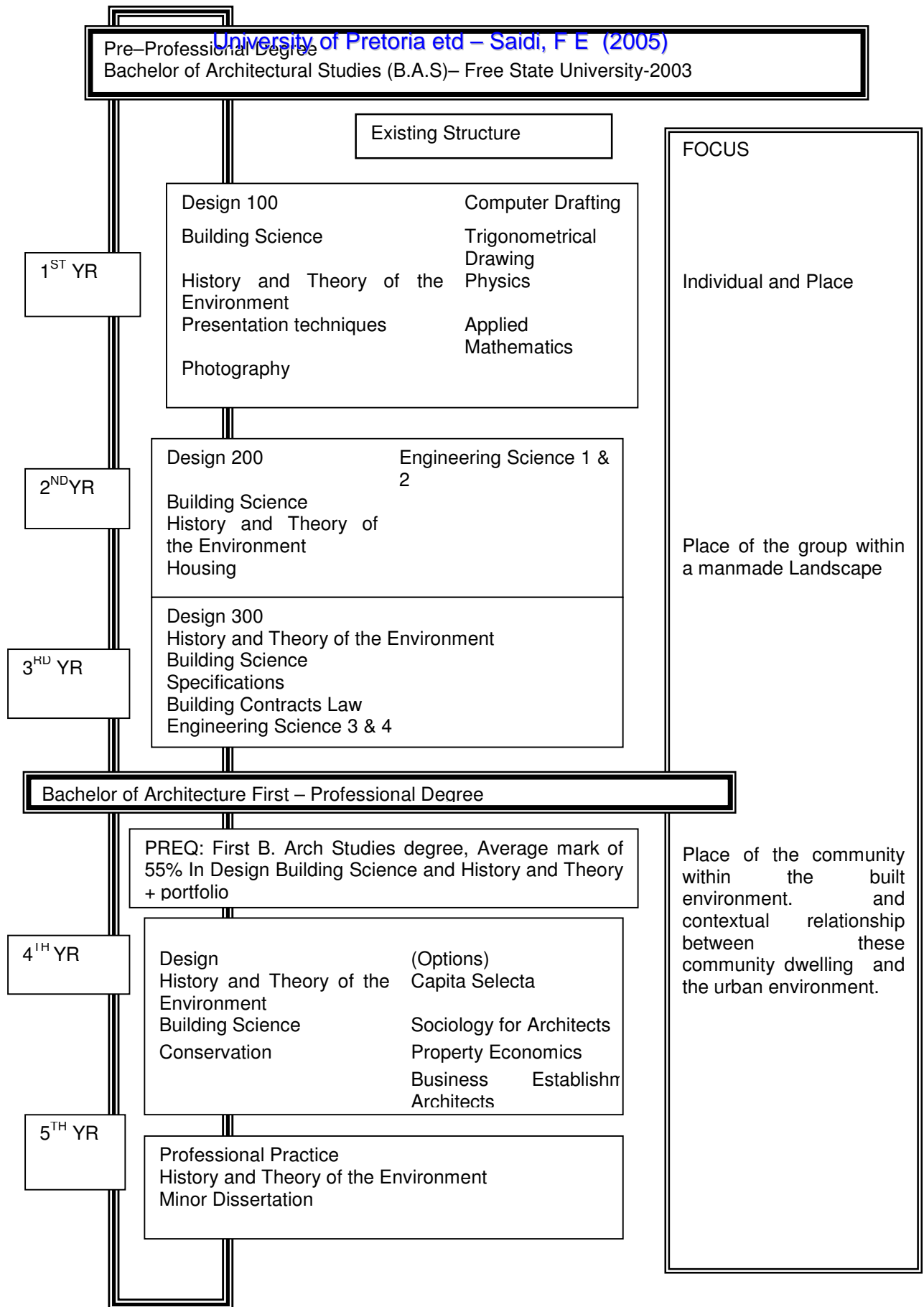


Figure 2.9-1. Free State Curriculum Structure. Source SACA/ RIBA/CAA Visiting Board Report 2000

2.9.1 Outcomes

Table 2.9-1 below gives an indication of the content response of the architecture programmes at Free State University to the outcomes demanded by SAQA under its NBS regulations. The development levels refer to competence and complexity levels described by the school, which a learner would have to acquire to attain the minimum competence of the desired outcome.

At Free State University it can be observed that an ample amount is spent on the traditionally core modules in architecture education i.e. Design, Construction, History and Environment. Less definable outcomes like teamwork have at least one module. As a whole the Free State curriculum reflects a strong emphasis in the subjects that architects have traditionally been taught. Table 2.9-1 below shows the developmental levels in terms of courses-modules of the outcomes prescribed by SAQA.

Table 2.9-1 Free State University's Outcomes

OUTCOME	Associated Course	Developmental Levels
To be able to communicate effectively in drawing, writing and verbally clients	Presentation techniques Photography	6 +4 developmental levels
To be aware of the impact of architectural activity on society and the environment	History and Theory of the Environment	6 + 4 developmental levels
To be aware of the role of architectural history	History and Theory of the Environment	6 + 4 developmental levels
To be competent to work efficiently as an individual in teams and multidisciplinary situations	Sociology for Architects	1 developmental level
To be able to use and apply information technology	Computer Drafting Trigonometrical Drawing	2 developmental level
To interpret and apply legal principles within the context of the built environment	Building Contracts Law	1 developmental level
To be competent to apply knowledge of design, construction, materials, structure and procedure from the first principles to complex architectural solutions	Building Science (6) Engineering Science	6 + 2developmental levels (Construction) 4 developmental levels (Structures)
To be competent to collect relevant information necessary for a thorough analysis of an	Design	6 developmental levels

architectural proposition		
To be competent to synthesize collected information and produce creative procedural and non-procedural design solutions for an architectural project.	Design	8 developmental levels

2.9.3 Curriculum Organising Principle.

Using Conrad's (1978) framework for curriculum planning, a school's curriculum can be examined and assessed to establish the fundamental curriculum organizing principles assessed to establish the fundamental curriculum organizing principles. This can be done using tables. Table 2.9-2 below shows the elements of the curriculum framework for Free State University to include the following:

Table 2.9-2 Free State University's Curriculum Organizing Principles

Academic Disciplines	Understanding of the architecture as a discipline is the emphasis in the first-degree programme; as such the focus is on the integration of theoretical and practical knowledge. The second part of study of the discipline of architecture focuses on future professional requirements of learners by offering specialization in one of the following; Urban Design, Practice, Conservation/ Rehabilitation and Architecture in Economic and Social development.
Student Development	It is difficult to say if Free–State University school of architecture does organize its curriculum around learners' development. These are implied than explicit objectives. Flexibility, as an institutional condition that enables learner development, in the first-degree curriculum is not accommodated. Secondly learners do not have the opportunity to develop their own subjects with their lecturers. Time units appear to be fixed. Choice and flexibility is available to the learners only in the second degree B. Arch where they have a choice of a study area in which they would want to specialize. This, however, does not mean the learner has a choice of how they would like to learn that particular specialization.

Great Books and Ideas	Free-State school of architecture does not follow strictly the great books and Ideas principle as curriculum structuring element because like other schools it's courses are defined and offered as lecture courses. Learners have no opportunity to direct their own learning. The great books and ideas principle is limited to the adoption of Norberg – Schulz's theories for place-making and Kolb's experiential learning theory in the design of their subjects. Emphasis of specialization on some of Free-State undergraduate courses negates the great books and ideas principle. Even though the seminars, tutorials and preceptorials are used at Free-State their subjects are limited in the main to architecture issues than general human problems– the liberal courses i.e. sociology, economics, and political science are not offered in their structure.
Social Problems	Free-State location in the agricultural/rural heartland of South Africa prompts the school to include in its curriculum, course-modules that enhance sensitivity to place and to borrow words from their handbook “ ...the fostering of an underlying respect for the making of meaningful place in the delicate, natural and rural environments...” This school's has responded to its rural context by including Conservations course-modules in their curriculum. Earth Construction and Community Development are integral parts of the design studios. Though social problems are included as shown above, they are not the main principles on which Free-State's curriculum are organised. Flexibility of learning is available at postgraduate level and learners have little chance of developing their learning program around a specific social problem. Even then the location of learning is still the location of the institution. Because of its “isolated” location Free-State's curriculum structure is designed to allow learners the opportunity to visit other parts of the country and neighbouring states. This only happens after the initial three years of study.
Selected Competences	Free-State University school of architecture have had to design for the achievement of competences as described by SAQA through the appropriate NSB. Learners are evaluated on the results of their educational experiences in terms of the identified competences with demonstrable evidence, and not grades as the main criterion for credit (Conrad. 1978:37). Free-State's programme provides learners' with little opportunity to design their curriculum.

2.9.4 Establishing Curricular Emphases

Table 2.9-3 Free State University's Curricular Emphases

Locus of Learning	Free-State University's school of architecture's curriculum emphasizes Campus- Based learning (Studio learning) than experiential learning (where the learner deals directly with a pertinent social problem). It is still a traditional approach to teaching of architecture.
-------------------	--

Curriculum Content	Free–State content weighs more to the breath type of knowledge in that the course in all the years of learning includes the basic knowledge in all major areas important for the study of architecture. Hence Design, building science and, history and theory form the main body of learning throughout the programmes.
Design Programme of	Faculty designs the programme with the learner's opportunity to exercising self –directed learning only in the second year of the higher Bachelor of architecture degree. The first degree is completely designed by faculty while only in the second year of the higher degree is a learner allowed to design a building of their choice, to demonstrate the agreed upon competences.
Flexibility of Program	There is little flexibility in the first–degree programmes with almost all the courses being the required course for graduation. In the higher degree a much greater choice is allowed by way of electives. Distribution courses which are of an optional character are non-existent.

2.9.5 Accreditation Boards: Comments on the Curriculum

The discussion below is derived from the latest report of the SACAP, RIBA and CAA Joint Visiting Board to the Department of Architecture at the University of Orange Free State, from the 4th to 7th April 2000.

Bachelor of Architectural Studies Programme

The accreditation report states that presentation of Theory and History subjects by the design studio lecturers at Free State architecture school helps the integration of learning in the programmes offered. However it was also noted that service departments' approach to learning was different with the phenomenological approach (development of understanding through empirical methods) used by the architecture school. The report states that a schism exists between the service departments and the architecture course. The board recommended that the service departments needed to be drawn into the teaching methodology of the architecture schools in a coordinated manner to ensure integrated learning.

Integration of Technology (IT

Integration of Technology (IT) in the course-module appears tentative, because of lack of expertise and hence its use in the design studio was restricted.

History and Theory

To ensure relevance in the programmes the content of History and Theory subjects were undergoing change to include South African content. In the technical work learners expressed concern that there was too much emphasis placed on formulas and with not enough application. It would seem that learners wanted a module that was aligned with applied cognacy for practice.

Learners comments

Learners complained that while appreciating the importance the year-out, there were no existing mechanisms to encourage learners to take year-outs. The Accreditation Board did not support the suggestion by the learners to make the year-out, a practical formal requirement for admission into the higher degree programme because of various problems that they were not elaborated. The board was of the view that portfolio and journal review were adequate mechanisms for admission of learners into the higher degree programmes.

Bachelor of Architecture Programme.

It was this school's aim to develop a programme with a wider focus in Urban Design, Practice, Conservation/Rehabilitation and Economic and Social Development. The present B Arch programme had Urban Design as a large component of the curriculum. Practice Management was perceived to be largely a remote issue for students with delivery of course content being a problem. The possibility of offering other optional focus areas in Conservation/ Rehabilitation or/and Economic and Social Development remain uncertain. The board questioned whether the school had resources to have four focus areas. The recommendation was to shift Practice and Management into other educational programme to be organised in conjunction with the professional body.

Further in view of the limited human resources in the school, the Conservation/ Rehabilitation could be integrated into the BAS programme and organised in conjunction with the local branch of the South African Heritage Agency who could also certify the module.

Housing

The board was of the view that the isolation of Housing in the curriculum was undesirable and that it needed to be integrated in the studio work.

School Image

The Board was of the view that the school's perception of being physically isolated and culturally isolated was perhaps overstated. It was the Boards view that the location of the school represented the social circumstances that were the microcosm of South African society.

Language.

The school has a dual medium (English and Afrikaans) policy for teaching. This has resulted in an increase in the number of black learners, which the board views as positive for the school and the University. However since not all lectures cannot teach in both languages, for various reasons, part-time staff have had to be appointed at a huge expense. Even though the arrangement seems to work, it effectively still separates on the basis of language and consequently colour in classes. Further the board reports that there is a perception among the English-speaking learners that they are being short-changed in terms of module-content. In its' discussion with the learners, the board was of the opinion that there was an inflexible approach to the issue. The board urged the learners to debate the matter with all concerned in a proactive and positive way because it does not augur well for the discipline that relies on debate and a studio culture where exchange of ideas is necessary for positive learning. The board's concern is exemplified in the statement that " Segregation undermines the dynamics of culture."

Black learners

Enrolment of black learners was still a problem, as most applicants did not have Mathematics and Science.

Graduates

Graduates of the school are sought after and obtain work in South Africa and outside it's borders.

Research

Earth Research could be used for curriculum development

Technikon

The board did not support the idea of a second school of architecture at the Technikon, but instead urged the two parties to engage in co-operative efforts and optimizing of resources by addressing educational gaps that will benefit both institutions.

Communication

According to the board learners seemed uncertain of their powers and rights although they attended faculty meetings. There appeared to be no effective feedback and monitoring mechanisms, particularly with regard to issues of curriculum and course content.

2.9.6 Summary

The Free State architecture programmes reflect an integrated type of curriculum with a structure that emphasizes vertical coherence of modules as can be seen from the consistent description of the modules- Design, Building Science, History and Theory of the Environment and Engineering from the BAS and B Arch programmes.

Horizontal coherence is expressed by the desire to make service departments understand and apply similar teaching methodologies as those in the architecture school as indicated in the accreditation report.

Flexibility by way of allowing learners choice in modules they would like to pursue in the BAS programme is minimal. Learners follow a prescribed path. In the B Arch programme learners have a choice from the offered electives.

In order for the curriculum to be relevant to its context, according to the head of department, the school has designed learning modules that address the urban problems of city and its immediate rural surroundings (O, Joubert – HOD : personal communication, August 6 2003). The focus of the BAS programme seems to emphasize applied cognacy with knowledge organised in manner that prepares the learners for the practice offices. In the B Arch programme the school focuses on Urban Design, Practice, Conservation/Rehabilitation and Economic and Social Development. The last two areas of focus, as the accreditation report states, are however not developed because of lack of staff. The programmes at Free State remain in the main, practice oriented, which they do very well.

2.10. UNIVERSITY OF PRETORIA

2.10.1 Bachelor of Science /Architectural Studies –3/2 Degree Structure

The first degree offered at Pretoria University is the three-year Bachelor of Science in Architecture programme, which according to SAQA regulations and SACAP stipulation qualifies the graduates from this programme as candidate Architectural Technologist. The second degree is the professional degree Master of Architecture that is awarded upon completion of a further two years of study and qualifies the graduates as candidate architects. Figure 2.10-1 below shows the curricular structure and content for each of the degree. This school also offers a Bachelor of Architecture Honours programme, which a learner acquires on completion of one year of study after the BAS programme.

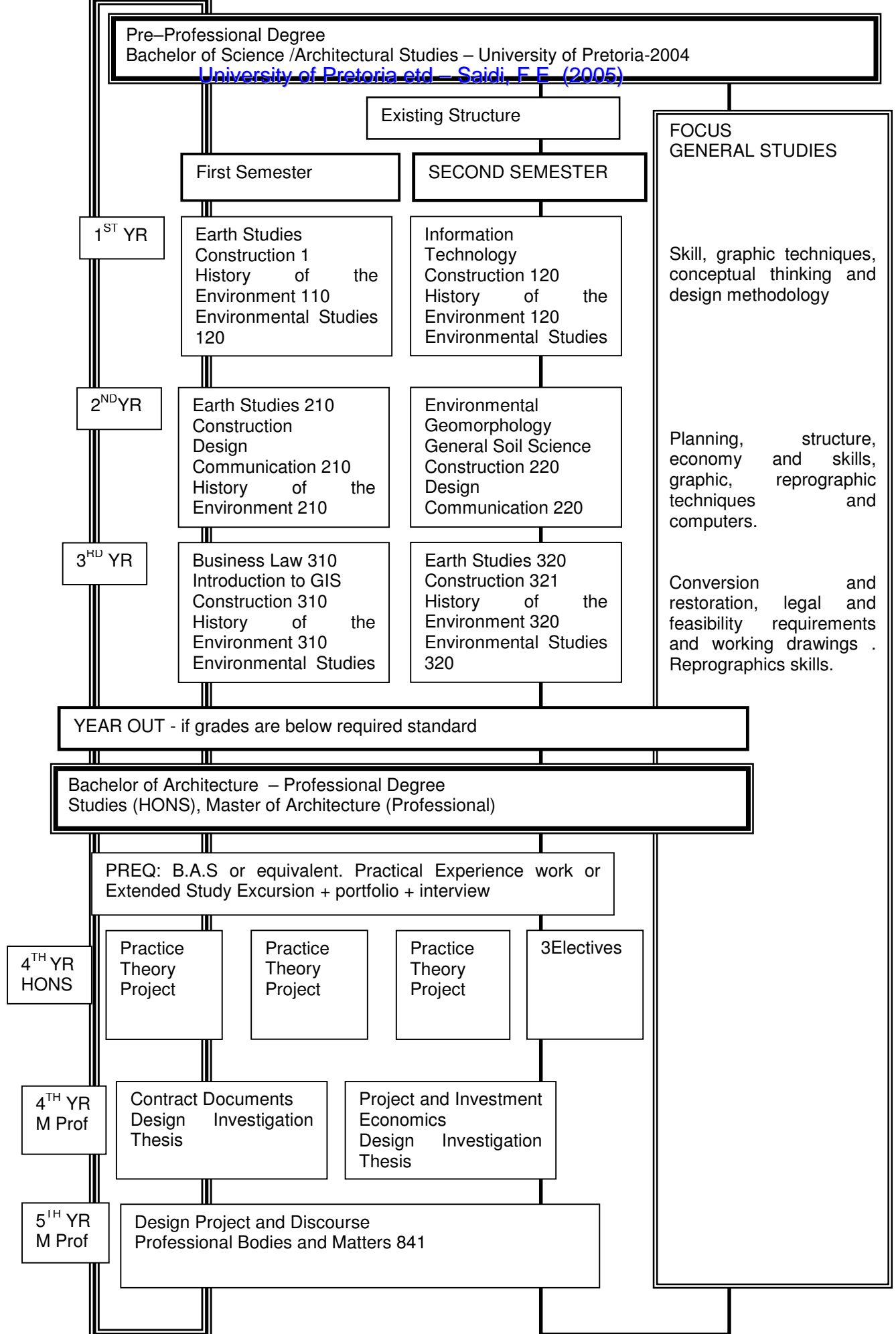


Figure 2.10-1. Pretoria University Architecture Curriculum Structure. Source Handbook 2004

2.10.2 Outcomes

The Pretoria University curriculum is well organised to achieve most of the outcomes required by SAQA through the traditional modules. As such modules like History and Theory of Architecture and Design have a module in every semester of learning. Table 2.10-1 below shows the developmental levels in terms of courses-modules of the outcomes prescribed by SAQA and NSB 12. From the table it is evident that the Pretoria school spends relatively more time on written communication skills for their students than other schools. But like other schools time spent on developing learners Teamwork skills outcome cannot be determined by any one module.

Table 2.10-1 Pretoria University's Outcomes

OUTCOME	Associated Course	Developmental Levels
To communicate effectively in drawing, writing and verbally clients	Introduction to Poetry Critical Language Skills Introduction to Prose Introduction to Drama	4 developmental levels
To be aware of the impact of architectural activity on society and the environment	Environmental Studies	6 + 4 developmental levels
To be aware of the role of architectural history	History of the Environment	6 + 4 developmental levels
To be competent to work efficiently as an individual in teams and multidisciplinary situations	Non evident	developmental levels
To use and apply information technology	Information Technology Design Communication 210 Design Communication 220	3 developmental levels
To interpret and apply legal principles within the context of the built environment	Business Law 310	1 developmental level
To be competent to apply knowledge of design, construction, materials, structure and procedure from the first principles to complex architectural solutions	Construction Theory of Structures 321	6 developmental levels (Construction) 5 developmental levels (Structures)

To be competent to collect relevant information necessary for a thorough analysis of an architectural proposition	Design 220	6 developmental levels
To be competent to synthesize collected information and produce creative procedural and non-procedural design solutions for an architectural project.	Design 220	6 developmental levels

2.10.3 Curriculum Organising Principle.

Using Conrad's (1978) framework for curriculum planning, a school's curriculum can be examined and assessed to establish the fundamental curriculum organizing principles assessed to establish the fundamental curriculum organizing principles. This can be done using tables. Table 2.10-2 below shows the elements of the curriculum framework for Pretoria University's architecture programmes to include the following:

Table 2.10-2. Pretoria University's Curriculum Organizing Principles.

Academic Disciplines	The curriculum is organised based on the traditional premise that perceives architecture to be a combination of art and science. Therefore, like other schools, it is curriculum reflects a discipline that is dominated by design studio that has most credits compared other courses. Construction, History and Theory as separate course-modules define the mode by which knowledge is organised and transmitted to the learners. Academic discipline determines the curriculum organization
Student Development	The undergraduate degree is not deliberately designed around learners' emotional development as well as their intellectual and cognitive growth. If these goals are intended then they are implicit than explicit. Students develop is not the basis on Pretoria University school of architecture's curriculum is designed.

Great Books and Ideas	The time spent (over a quarter in terms of credits) on the Design Studio in the curriculum for this particular school indicates the predominance of the studio as the main mode of learning architecture. The comparatively more time that the Design Studio is allocated can be interpreted as time needed for integration of knowledge into design. It can be concluded that this school's notion of learning architecture is using the Design Studio to integrate knowledge. In the B.Sc program – the liberal courses i.e. sociology, economics, and political science are not offered in their structure. In the postgraduate some elements of these human problems course are offered as electives. The Great Books Idea is not the basis on which this schools' curriculum is designed.
Social Problems	The curriculum is not organised in terms of social problems. However courses like environmental studies address social and urban problems by incorporating courses like housing studies and sustainability. Social Problems is not the basis on which this school of architecture is based.
Selected Competences	The desired competences are not outlined in the school handbook but are stated in the individual course study guides. But, it is not articulated as to which courses are designed to meet the requirements of which outcome or competence. The levels of complexity through which a learner must proceed in order to acquire the desired competence are not stated both in the undergraduate and postgraduate degree. Selected Competences is not therefore the basis for this schools' curriculum.

2.10.4 Establishing Curricular Emphases

Table 2.10-3 Pretoria University's Establishing Curricular Emphases

Locus of Learning	The B.Sc Arch and B Arch (Hons) programmes are traditional campus-based programmes with the Design Studio as the main locus of learning. Opportunity for experiential learning increases in the Masters professional programme but the programme is mostly campus-based.
Curriculum Content	Curriculum content reflects both breath and depth in that wide ranges of course-modules are covered in the programmes but there are also some few course are taken to a greater depth of study i.e. Theory and History of the Environment, Construction and Structures. The course content of the M. Arch programmes are designed with emphasis on the producing candidates for registration as professional architects hence are restricted in that manner.
Design Programme of	In the B.Sc Arch programme all the courses are designed by faculty as well the M. Arch (Prof) programme.

Flexibility of Program	All the programmes in this school are highly structured. The B.Sc Arch programme offers strictly required courses. The B Arch (Hons) programme has at least three electives in the major learning areas. (see the chart above.) The learners have a limited opportunity to design their own learning. This is mainly exercised by way of own choice of Design Project in the final year of the M Arch (Prof.).
------------------------	--

2.10.5 Accreditation Board: Comments on the Curriculum

The discussion below is derived mainly from the latest report of the SACAP, RIBA and CAA Joint Visiting Boards to the Department of Architecture at the University of Pretoria, from the 1st to 3rd September 2003 and following up visit on the 27th November 2003. Comments from earlier Visiting Boards of 22nd to 23 November 2001 and 23rd to 25th August 1999 have also been included in the discussion.

Bachelor of Architecture Programme.

Design

The accreditation board noted that there was a need to restructure the design modules of all the three years both horizontally and vertically so that the sequencing of design projects is articulated in order of complexity and in alignment with the foundations provided in the supporting academic modules.

The lack of study guides for all the design modules made it difficult for learners to grasp the educational objectives and be able to appreciate determine their progress in learning design. The educational objectives were not elaborated in some of study guides. The board recommended that the study guide must be provided to help learners to articulate where and how the design modules are progressing.

City as Laboratories

The board commended the use of real problems in the city as sources of learning and knowledge by the department.

Studio Culture

The board noted that a strong tradition of studio culture still exists that should be nurtured. Also commended by the board was the fact that learners also used both traditional drawings boards and computers in the studios as necessary.

Credits

The board was of the view that credits allocated to design modules were not commensurate with the time spent by the learners in the studios. There was a need to be review the allocation of credits so that learners receive fair treatment. This would entail a change in content and assessment loads of other academic support modules.

First Year Design

The boards observed that the large number of learners placed high demand on staff and the situation should be reviewed if the high standards are to be maintained. The first year should be more general than biased towards architecture. The board recommended that the design module should be divided into two semesters to enable weaker students to re-evaluate their situation before carrying on to the next semester. The board argues that such a system would be beneficial especially for learners from deprived school backgrounds. The board noted that these issues were raised in the 1999 accreditation report.

Second Year

The board stated that the theoretical courses appeared to be overloaded and were having a negative impact on the time for the studio module. Integration of the design module with especially earth sciences was non-existent. The board suggested restructuring the second year based on clear academic and theoretical understanding.

Third Year

The board found a lack of integration between the design module and other modules. While there was better integration between design and construction modules, it was noted that design output was minimal. In the accreditation boards' words, " the design portfolios were thin, exhibiting little integration with other subjects, bad visual communication skills, no contextual reference, planning problems and lack of innovation"(2003: 6). Anomalies in the marking systems were also observed.

Construction KON

Though the board was satisfied with the content and standard of this module, it was noted that there was too much assessment and recommendation was that the load could be lessened. Such kind of assessment reduced learners' available time for design studio and also denied staff time to engage in research activities.

Earth Sciences and Structures

The board found that the content for Earth Sciences was relevant but assignments needed to be lessened and made more practical to enable learners to appreciate and understand application of the theoretical knowledge gained.

The board was of the opinion that though the structures module was well integrated into the design studio its academic content could be condensed.

Design Communication

The board stated that although the content of his module was important it was noted that it added to the overload of work especially in the second year of the programme. Some of the content was not applicable to architecture. It was the board's recommendation that this course could be made into an elective.

Information Technology and Information Services

The learners in this school showed knowledge of computer applications in all aspects of learning: design, theoretical assignments and construction. While the positives of using technology were evident the board cautioned the school on the need to maintain the traditional skills like freehand sketching and reading through innovative means.

MArch (Prof)

Year 1 B Arch (Hons)

The board found this year to be well structured and integrated.

Year 2 MArch (Prof)

The board recommended that the module 814 which addresses management and practice issues of architectural practice would be more beneficial if it were introduced earlier in the and for a much longer duration. In the Design Treatise and project Discourse the board cited the use of a formula became a hindrance than a facilitator

of design. The board also noted the grading system in the examination had not been clarified to examiners and this led to problems.

Research

The board recommended that staff/ learner ratios, which are now at 1/20, should be reviewed as this affects staff's research ability. The board was of the opinion that research could not be left to be done in "left –over" time after marking and heavy interaction.

Students

The learners expressed the following regarding their studies:

- They would like to do more short Projects
- They would like to be give entrepreneurial and practice management course/information before they graduate with the B.Sc (Arch) degree.
- They would a review of their academic workload, particularly the second year.

General Comments

Black Learners

The 2001 report of the accreditation board stated that although the numbers have increased the problem was class related than race. It was stated that the black students who attended the architecture courses were in need of financial assistance in the form of bursaries as was indeed happening at other schools or departments.

Security

The 2001 accreditation report noted that since the number of female learners had increased, maintaining the department's traditionally strong studio culture was becoming increasingly difficult, as security could not be guaranteed on campus and en route to and from the campus.

Staff

The 2001 accreditation report stated that staff resources were stretched at the first year level because of the incorporation of the Landscape Architecture and interior Architecture into the department. This situation threatened the foundations of a good department and a recommendation to increase staff at first– year level was made by the board.

2.10.6 Summary

The architecture programmes offered at Pretoria University can be described as embracing an integrated type curriculum. In the typical “Vitruvian” model of curriculum, the modules are well articulated vertically as the descriptions of the consistent titles of modules indicate: increase complexity as learners progress from first year of the B.Sc. Architecture programme to the final year of the MArch programme.

Vertical coherence appears to have been achieved while horizontal coherence has been less successful due to the support or service modules “overloading” learners with theoretical knowledge, which they find they cannot use in the design studio.

Flexibility in terms of options of modules to pursue is not offered to the learners in B.Sc Architecture programme. A different kind of flexibility is offered at completion of the first year, where the learner has the option to study either of two other programmes related to architecture: Interior architecture or Landscape architecture.

The focus of all programmes in this school points to a curriculum that emphasizes applied cognacy than academic cognacy. Social relevance is attained through using the city as a laboratory form which learners can consolidate their knowledge of urban dynamics and how it affects architecture.

The programmes offered at Pretoria University add a different meaning to flexibility in architectural education. On the whole the programmes are successful.

2.11. UNIVERSITY OF PORT ELIZABETH

2.11.1 Bachelor of Science /Architectural Studies –3/2 Degree Structure

The first degree offered at Port Elizabeth University is the three-year Bachelor of Building Arts programme which according to the SAQA regulations and SACAP stipulation qualifies the graduates of this programme as candidate Architectural Technologist. The second degree is the professional degree Master of Architecture is awarded upon completion of a further two years of study and qualifies the graduates as candidate architects. Figure 2.11-1 below shows the curricular structure and content for each of the degree.

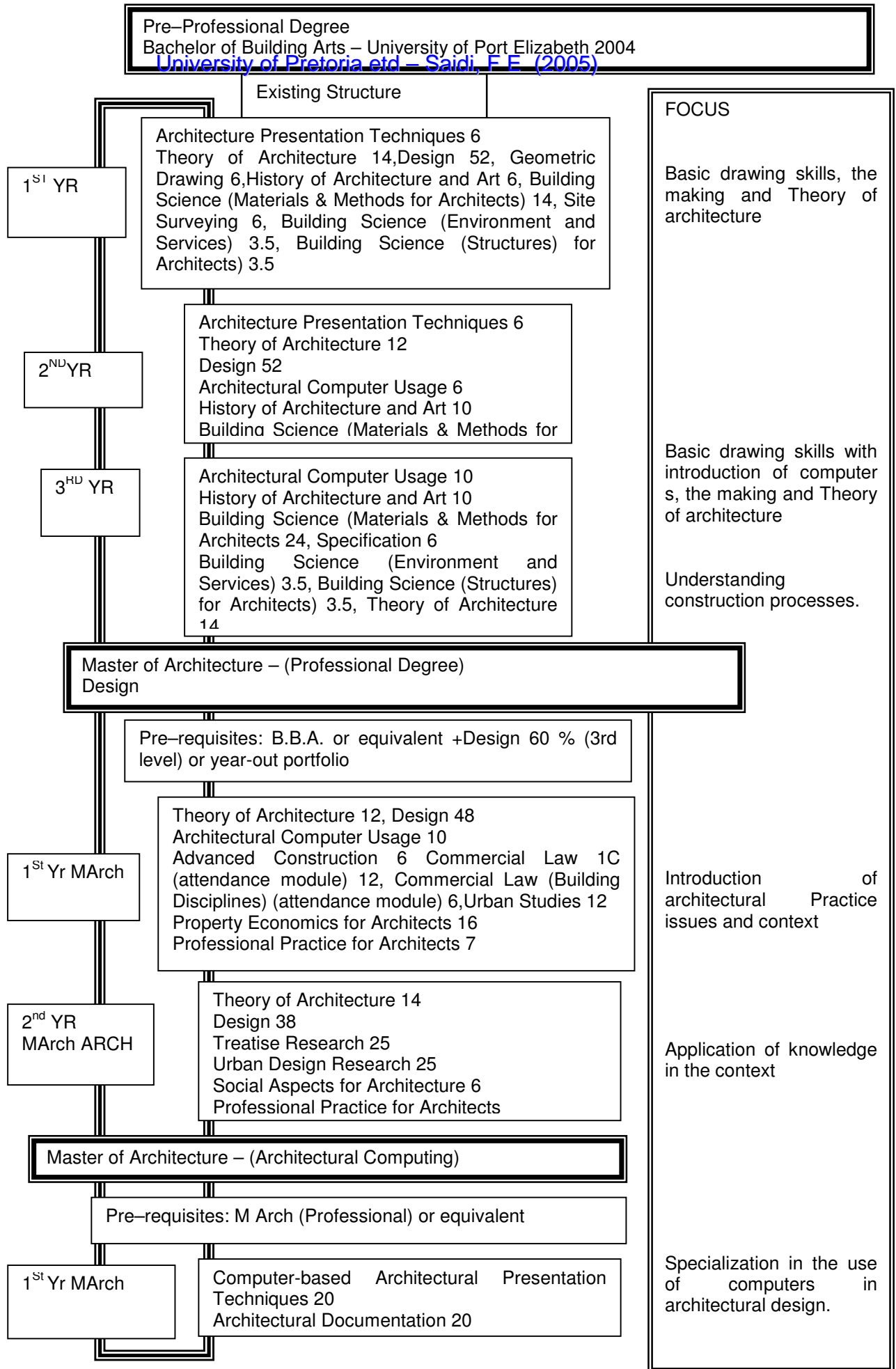


Figure 2.11-1. Port Elizabeth Architecture Curriculum Structure(source Handbook 2004)

2.11.2 Outcomes

The Port Elizabeth school curriculum shows an emphasis in traditional knowledge areas of the architecture discipline. Therefore the outcomes of communication, technology, history and creativity required by SAQA can be easily aligned to modules provided by the school. Most of these modules are developed to at least six levels of competence as seen in Table X below. Port Elizabeth school has also developed the level of computer literacy to eight levels of competence. But like other schools the Teamwork outcome is still not linked explicitly to any module.

Table 2.11-1 Port Elizabeth University's Outcomes

OUTCOME	Associated Course	Comment
To communicate effectively in drawing, writing and verbally clients	Architecture Presentation Techniques Architectural Computer Usage 10	6+ 2 developmental levels
To be aware of the impact of architectural activity on society and the environment	Social Aspects for Architecture 6 Urban Studies	4 developmental levels
To be aware of the role of architectural history	History of Architecture and Art 6	6 developmental levels
To be competent to work efficiently as an individual in teams and multidisciplinary situations		developmental level
To use and apply information technology	Architectural Computer Usage 10	6 +2 developmental levels
To interpret and apply legal principles within the context of the built environment	Commercial Law 1C (attendance module) 12 Commercial Law (Building Disciplines) (attendance module) 6	2 developmental level
To be competent to apply knowledge of design, construction, materials, structure and procedure from the first principles to complex architectural solutions	Building Science (Materials & Methods for Architects) 14 Advanced Construction 6 Building Science for (Structures) Architects) 3.5	6+2 developmental levels (Construction) 6 developmental levels (Structures)
To be competent to collect relevant information necessary for a thorough analysis of an architectural	Design	6 +4 developmental levels

proposition		
To be competent to synthesize collected information and produce creative procedural and non-procedural design solutions for an architectural project.	Design	6 + 4 developmental levels (Design)

2.11.3 Curriculum Organising Principle.

Using Conrad's (1978) framework for curriculum planning, a school's curriculum can be examined and assessed to establish the fundamental curriculum organizing principles assessed to establish the fundamental curriculum organizing principles. This can be done using tables. Table 2.11-2 below shows the elements

Table 2.11-2 Port Elizabeth University's Curriculum Organizing Principle.

Academic Disciplines	Faculty designs the curriculum thereby reflecting a typically traditional architectural programme. The first programme B.B. Arts reflects a depth in fundamental architectural knowledge that does not allow learners to participate in the design of their learning. It is highly prescriptive as is the M Arch professional programme. Learners' choice is restricted to, whether to take design studio or not in the third year of the undergraduate programme. This is a shift from the norm where the design studio is emphasised and maintained over all other forms of architectural knowledge. However design still determines whether the learner progresses to the M Arch professional studies in the school. Both programmes have widely accepted content in terms of curriculum that emphasizes an academic disciplines approach.
Student Development	It is not evident from the curriculum that learners' development is the basis of organizing curriculum in this school. Formal knowledge dominates the curriculum. In both programmes curricular, flexibility is minimal and learners are not afforded a chance to individually design their programmes especially in the B. B Arts programme. There is no emphasis on electives as the means by which learner development can be achieved. Assessment is based on written tests and examinations than evaluative reports that form the basis of student development as the organizing principle for a curriculum. The programmes are not based on the student development principle.
Great Books and Ideas	Port Elizabeth University's architecture programmes are not based on this principle because the content of curriculum is oriented in a preparatory manner for the practice of architecture. Modules are specific to architecture than attempting to address human problems as a whole.

Social Problems	The architecture programmes are not organised on the basis of any elaborate social issue. Curriculum content suggests, the acquisition of technical understanding of architectural concepts. It is only in the masters programmes that the modules that address social aspects, urban problems of society. These modules are constituents of the curriculum than the founding principles of this curriculum. Both programmes offered do not exhibit flexibility- the opportunity to design the learning process by the learners. The classrooms or studios remain the primary location of learning. It can be thus concluded that the programmes at this school are not based on the social problems principle.
Selected Competences	The use of selected competence as an organizing principle is not clearly evident. It can be reasonably assumed that this principle has been partially used in this school because of the need to rewrite its curriculum in SAQA terms and having to adhere to requirements for various levels of qualifications as stipulated by the NSB 12. Still the fact that learners cannot structure their own learning is an indication of the selected competences not being the only or main organizing principle for the curriculum. Assessment systems have not been detailed in the school handbook and are not tailored to selected competences norms. In conclusion, selected competences principle is used only in limited measures- it is not the main organizing principle for this schools curriculum.

2.11.4 Establishing Curricular Emphases

Table 2.11-3 Port Elizabeth University's Establishing Curricular Emphases

Locus of Learning	Port Elizabeth school of architecture is designed for campus-based learning. Like many others the first degree programme is almost completely campus based. The masters programmes with urban issues and social perspectives suggests that learners may engage in experiential learning. Generally it remains a traditional approach to teaching of architecture.
Curriculum Content	There is depth of study in the first degree programme in the specific knowledge about architecture as a discipline. The second degree (masters) and has more breath because architecture knowledge is expanded to include many issues- social, legal and economic.
Design Programme of	In there is no opportunity for the learners to design their individual programmes both in the undergraduate programme and masters programmes. Faculty designs the programmes.
Flexibility of Program	Learners' choice is restricted to whether to take or not the design module in the third year of the undergraduate programme. A few electives are offered in the masters programmes. Learners pursue their own interests in the fourth year of study in the design projects.

2.11.5 Accreditation Boards: Comments on the Curriculum

Accreditation Report

The discussion below is derived from the latest report of the SACAP, RIBA and CAA Joint Visiting Board to the Department of Architecture at the University of Port Elizabeth, from the 10th to 12th April 2000.

The accreditation board commended the school for its' clear strategic goal and aim which focus on traditional/ vernacular, ecological, social-economic areas as well the wider issues of globalization and sustainability. The board noted that there was still a low rate of enrolment for black learners at the school and generally because of its' open admissions system there was a high fallout rate. About fifty percent of the school's graduates went to work outside the country mainly because of the fairly advanced learning they had acquired in computers while in the school.

Bachelor of Building Arts. (Part I)

The board noted that history and theory modules were content driven than designed to develop the learner's critical imagination. This may be a case of knowledge being taught as required by the discipline than focusing on how the learners' are expected to develop critical thinking skills and become competent. The board also noted that written assignments were required late in the modules. The boards' recommendation was that the process of teaching History and Theory should be designed to cultivate analytical and critical thinking and writing in learners.

It was noted that the knowledge of the learners at entry level in the faculty, was below that required by the school. Mathematics and physics were cited as examples of knowledge areas where learners were ill prepared.

Integration of service modules.i.e technology, structures and services with the design studio was found to be lacking.

Bachelor of Architecture (Part I)

The school's focus on the urban problems -political, economic and social transformation - and the use of the surrounding townships in Port Elizabeth as a laboratory for the learners was highly commended by the board. The inclusion of sociology and philosophy also seemed to bolster the preparedness of learners for their studies in this year. The Visiting Board reiterated the need for the History and

Theory modules to be linked to design so as to develop the linguistic and literally skills of the learners as well as their critical attitudes.

The board noted that the Property Economics module seemed to be addressing the development of entrepreneurial skills.

2.11.6 Summary

The Port Elizabeth architecture school, like many others discussed earlier, exhibits a typically integrated type of curriculum. The school's focus is primarily on exploring design in architecture (Head of Department personal communication, February 2004). The undergraduate programme is vertically articulated with modules increasing in complexity as learners progress in the years. Horizontal coherence was yet to be achieved with the "support" modules.

Learners are offered little flexibility to pursue their interests in the undergraduate programmes. They are given more flexibility in the masters' programme through electives and the choice of design projects. The design of the learning programmes is very much under the control of faculty. Learners have little control of the pace and content of their learning.

The design modules in the first year of the masters' programme that address the problems of the local townships achieve relevance to context in the curriculum. The support modules i.e. sociology, philosophy also help learners to grasp the forms of the human problems that are abound in these situations not just issues related to design. Relevance is also achieved by ensuring that the learners in this school acquire computer skill and technological competency that they can apply in the global context.

The fact that about fifty percent of its graduates leave for outside the country and other richer provinces in South Africa should pose a challenges to the school so that its programmes can be so designed to answer the economic and social hardships that the province experiences.

2.12. UNIVERSITY OF WITWATERSRAND

2.12.1 Bachelor of Science /Architectural Studies –3/2 Degree Structure

The first degree offered at Wits University is the three-year Bachelor of Architectural Studies programme which according to SAQA regulations and SACAP stipulation qualifies the graduates from this programme as candidate Architectural Technologist. The second degree is the professional Bachelor of Architecture degree that is awarded upon completion of a further two years of study and which qualifies the graduates as candidate architects. Figure 2.12-1 below shows the curricular structure and content for each of the degree programmes as well as the objectives of each year of learning.

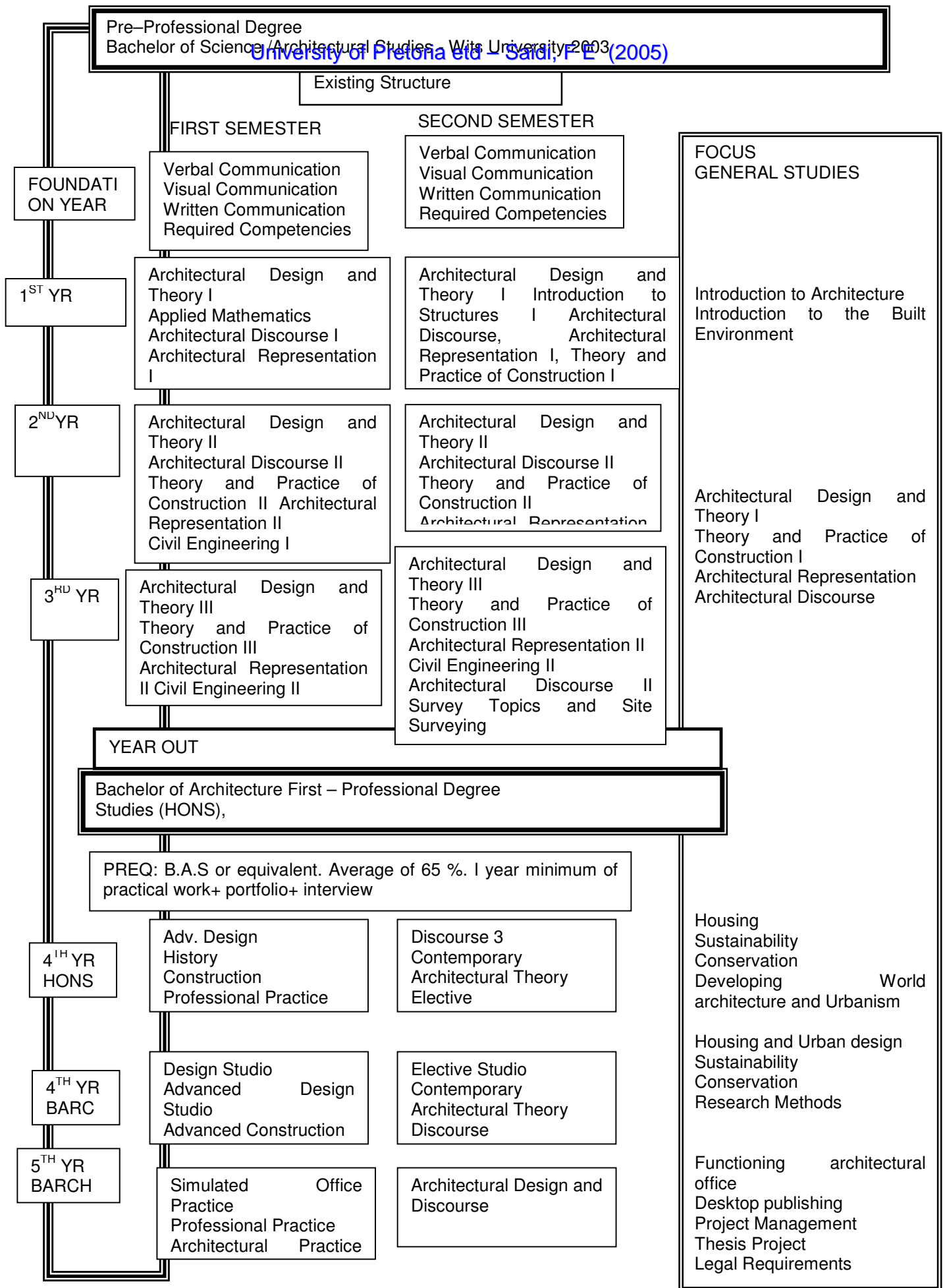


Figure 2.12-1 Wits University Architecture Curriculum. Source Handbook. 2003

2.12.2 OUTCOMES

Table 2.12-1 below shows how Wits University's architecture programmes are organised to meet the outcomes stipulated by the architectural NSB under SAQA. It aligns each stipulated outcome with the modules designed by the school. It also shows the levels of development that a learner must have undergone in order to gain the required competence. As stated earlier the level of development refers to the one semester's work of a particular module.

Table 2.12-1 Wits University's Outcomes

OUTCOME	Associated Course	Comment
To communicate effectively in drawing, writing and verbally clients	Architectural Representation II Graphics (4) Descriptive Geometry (2) Computers and CAD	4 developmental levels
To be aware of the impact of architectural activity on society and the environment	Architectural Design and Theory	6 +4developmental levels
To be aware of the role of architectural history	Architectural Discourse II	6 developmental levels
To be competent to work efficiently as an individual in teams and multidisciplinary situations	Architectural Design and Theory	6developmental levels
To be able to use and apply information technology	Architectural Representation (Computers and CAD)	3 developmental levels
interpret and apply legal principles within the context of the built environment	Architectural Practice (Law)	1 developmental levels
To be competent to apply knowledge of design, construction, materials, structure and procedure from the first principles to complex architectural solutions	Construction II Structures II	6 + 4 developmental levels (Construction) 5 developmental levels (Structures)
be competent to collect relevant information necessary for a thorough analysis of an architectural proposition	Architectural Design and Theory Design Studio Advanced Design Studio	6 +4 developmental levels
be competent to synthesize collected information and produce creative procedural and non-procedural design solutions for an architectural project.	Architectural Design and Theory	6 +4 developmental levels

Where the numbers 6+4 are indicated, it refers to the number of modules that are dedicated towards achieving a particular outcome, firstly in the undergraduate programme which is normally six (6) semesters and four semester (4) in the post graduate levels in the professional programmes. While in most situations it is possible to align a module to a particular outcome, it is not always possible, using only module title, to align a number of modules to an outcome. It means, therefore that the legal requirement, by the minimal time allotted to it in the curriculum is not valued as some other outcomes in the Wits programme as demanded by SAQA. The preparedness of students graduating from the Wits, in terms of the legal outcomes when compared to other schools could be questioned given that the more time spent on a module in the curriculum structure is usually a good indication of how much value is placed on learning that outcome by the school.

2.12.3 Curriculum Organising Principle(s).

Using Conrad's (1978: 10) assumptions the Wits curriculum was analyzed so as to reveal the fundamental or basic organizing principles on which it has been based. Each of Conrad's five curriculum principles of organization has been tested against Wits University's architecture programme in terms of content, time allocation, structure and methods of delivering knowledge to the learners. Table 2.12-2 below discusses each organizing principle. It can be said that, in terms of programme content, the Wits University programmes are to large extent organised on combination of two principles: the traditional academic disciplines principle and the competence principle as demanded by NSB stipulations. In terms of structure the programmes have followed a social problems principle in that it, firstly it has included a foundation year (pre– first year of the BAS programme) for learners from previously disadvantaged backgrounds, and secondly the urban problems of the society are designed to be studied in the Bachelor of Architecture programme.

Table 2.12-2 Wits University's Curriculum Organizing Principle(s).

Academic Disciplines	Wits architecture school curriculum reflects a typically traditional architecture curriculum that has courses organised around the Design. The number of credits assigned to it indicates the dominance of the Design Studio. Design Studio credits are at least twice the number credits for a major course like Discourse or three times the number of credits for the Construction course. This arrangement reflects learning of design by doing while acquiring the necessary theory.
----------------------	---

<p>Student Development</p>	<p>In the first degree, the BAS, the learners' development i.e. flexibility and learners' designed progress are not accommodated. Wits curriculum prescribes the learning experiences. It is not evident that there is deliberate attempt to integrate feeling and emotion to the intellectual and cognitive growth. While there are definite objectives to develop the learners' abilities to serve society and be socially, culturally, economically and environmentally responsive, development of the learner's personal skills i.e. managing emotions, establishing identity, finding purpose, and developing autonomy, interpersonal relationships and integrity are noticeably absent. The learners are not able to design their learning programmes, except to a limited extent in the BAS (Hons) programmes.</p>
<p>Great Books and Ideas</p>	<p>The structure of curriculum at Wits architecture school is at variance with the great books and ideas concept. The curriculum reveals a strong disciplinary based learning and while content shows concerns for society it does not address in its entirety the focus on the perennial problems of mankind. Architectural problems take precedence.</p>
<p>Social Problems</p>	<p>The Wits architecture programmes uses two social problems to organize its curriculum both in terms of structure and content. Firstly the school recognizes the need to address the legacy of inequity in the built environment profession. It has thus extended its curriculum by including at the beginning of the programme a foundation year a course undertaken by learners from previously disadvantaged backgrounds.</p> <p>Secondly the BAS (Hons) programme is to some degree oriented toward addressing understanding of the contemporary built environment in which the university is located and its problems i.e. the urban problems of Johannesburg. The programme is therefore designed to enable the learners to pursue higher specialized studies through the MSc in Development Planning, MA in Housing or a postgraduate qualification in Property Management.</p>
<p>Selected Competences</p>	<p>Wits architecture programmes has clearly set out outcomes to ensure that the desired behavioural outcomes for its graduates. Each outcome is has linked to it, a series of courses through which it is assumed that the learner can attain the particular competence in both the BAS and BAS (Hons) programmes (Handbooks 2003). The Wits programmes can be said to a fair extent, to be competence based.</p>

2.12.4 Establishing Curricular Emphases

According to Conrad's (1978:11) view on establishing curricular emphasis, it is clear that the first degree BAS programme at Wits University is a traditional programme because it is the locus of learning. Experiential learning is minimal although there is wide depth and breath in the content of knowledge as shown by the range of modules that learners are exposed to. There is little flexibility as all the modules are

required modules thereby giving the learners little or no opportunity to design their learning programme.

However, there is evidence that in the B. Arch programme, the learners are increasingly exposed to experiential learning when they use the City of Johannesburg as a laboratory for their studies of urban problems. The content of modules has depth and breath in that they address professional as well as academic knowledge. Flexibility is to some extent, increased by the opportunity to select electives and also the topic of the final year thesis projects. Curricular Emphasis of Wits university curriculum is shown in the Table 2.12-3 below.

Table 2.12-3 Establishing Curricular Emphases

Locus of Learning	Wits architecture programme reflects the traditional Campus based programme. A limited amount of experiential learning is allowed especially in the design studio i.e. projects in inner City Johannesburg, Kliptown etc.
Curriculum Content	Content in the curriculum reflect both breath and depth in that a wide range of courses are covered in the programmes but there are also some few course are taken to a greater depth of study i.e. Discourse, Theory and Practice of Construction and structures because of their presence in every semester's programme.
Design Programme of	In the undergraduate programme faculty design the programme. The BAS (Hons) programme offers an opportunity for the learners to make choices of study areas they would like to pursue in the design studios. Even then, faculty designs the bulk of the course work.
Flexibility of Program	Flexibility is little in the first-degree programmes with almost all the courses being the required course for graduation. In the BAS (Hons) degree choice is limited to the Design Studio where the learner can focus on anyone of the contemporary problems in the fields of housing, urban design or architectural deisgn.

2.12.5 Accreditation Boards: Comments on the Curriculum

The discussion below is derived mainly from the latest report of the SACAP, RIBA and CAA Joint Visiting Boards to the University of Witwatersrand School of Architecture and Planning dated 26th November 2003.

Bachelor of Architectural Studies Programme

The comments focused on the level of the standards of architectural design, environmental design, construction and architectural technology that had been found to be low in previous visits and the school had been asked to make improvements.

The board was concerned that learners did not show use of computer application and images in their portfolios hence, their suggestion for the Wits school to develop and strengthen CAD and Computer studies in general.

Bachelor of Architecture Programme.

The accrediting board in their initial report of 2001, was concerned about the lack of integration of construction and architectural technologies with design work. Limited computer representation was also cited as an area where improvements were needed.

Structure

Learners appreciated the year-out in practice between the BAS and B.Arch programmes, even though it was not mandatory. Learners were, out of their own accord, taking time for experiential learning in practice.

Studio Culture

Students also commented on the problems of developing and maintaining a worthy studio culture in the light of their location in Johannesburg where security is problematic. Another problem was that the limited supply of computers meant that more learners were forced to work from home than in the studios in the faculty.

Research

It was generally noted that although the research output for the faculty was low there had been improvements within the architecture school.

2.12.6 Summary

The Wits University programmes can be said to have responded to the requirements set by SAQA in the form of selected competences. Even though the competences have been linked to individual courses, there is not a similar clarity about the relevant assessment that the competence approach demands. Traditional methods of

assessment continue to be dominant but perhaps this was done to avoid the inherent problem that competence cannot be adequately measured.

The Wits curriculum has addressed the social problems in its structuring of knowledge starting with the foundation course and in its content by having electives and modules that address urban problems in the B Arch degree. Integration of critical modules like architectural design and construction continues to be problematic.

The emphasis in Wits' curriculum structure is on strong vertical linkages with some degree of horizontal linkages in that the first year modules are seen as preparation for the second year and subsequently the third year. Hence the module descriptions are defined as: *Architectural Discourse I, II, III, Civil Engineering I, II, Design I, II, III Architectural Representation I,II, III, Theory and Practice of Construction I,II, III*. There is little choice in the BAS programme where the subjects are combined according to applied cognacy– the modules are combined in preparation for the learners' role in the work place as candidate technologist and for studying higher architectural degree. Choice is increased in the B.Arch programme with more elective modules from which learners can choose thereby adding a degree of academic cognacy. The electives include modules like *Housing, Studio, Research Project, Simulated Office Practice, Professional Practice Law* that indicate that the B.Arch programme reflects a structure that embraces both applied and academic cognacy. In general the Wits programmes reflects an integrated type of curriculum structure where integration of support modules like construction and architecture technologies with design studio are encouraged as noted by the accreditation boards (Report 2003)

The BAS programme reflects a traditional type of curriculum in that there is little flexibility in terms of offering the learners' choice to organize his/her learning. In the B.Arch programme choice is however increased by the elective that are offered. The location of learning is still mainly the university campus. The design of modules is strictly done by faculty.

The head of the school is of the perception that, the school, ought to focus more on the intellectual aspects of design and urban issues than on the actual making of building. The assembly of buildings that is construction modules should adds L, Bremner (personal communication, September 8, 2003) be assigned to technical colleges who are well placed and have a history of teaching those modules.

Wits University architecture programmes are well established and do well in producing architects who compete favourably at international level, but it's programmes are still in the process of responding to the local issues. It is these

issues that will be critical in determining the type of change in the programme in the future.

2.13. ANALYSIS OF OUTCOMES FOR PROFESSIONAL PROGRAMMES

The NSB 12 responsible for Physical Planning and Construction (SAQA: a) outlines a set of competences as part of the programme towards professional registration for potential architects. These competences serve as a blue print for the curricula of schools of architecture in South Africa because of legal and financial implications as dictated by the government. Programmes that fail to organize their curriculum along these SAQA defined regulations risk losing their accreditation status and funding from government. All learners aspiring to practice architecture at professional level, must therefore be able to:

- demonstrate in depth knowledge appropriate to the discipline, and critical, and analytical thinking to appropriate, research, interpret, refine and modify existing knowledge of architecture
- demonstrate knowledge of architectural research methods, skills in the practice of architectural research appropriate to a specific context and ability to integrate architectural research and design.
- show design competences at a range of different scales, from the urban to the level of architectural detailing.
- be familiar with current technological knowledge and is able to integrate it with design solutions.
- communicate information and their own ideas and options appropriately and effectively in well structured arguments, showing an awareness of audience using academic/ professional discourse appropriately
- present material using innovative, effective and appropriate visual techniques in two and three dimensions, showing a high level of technical competence.
- demonstrates self- directed, systematic, independent thought and practice

- work with peers, in groups and is also able to work directly with outside parties in a professional manner.
- show understanding of the wider social and natural system, which impact on architecture, and has developed an appreciation for cultural and aesthetic diversity.
- reflect and act upon a wide range of learning strategies, both existing and innovative.
- have acquired the knowledge, values and practical skills to engage as a candidate professional in professional architectural practice in the community in a responsible, ethical manner, and in accordance with legal and statutory requirements.
- have been equipped to develop entrepreneurial opportunities in a future career.

The above criterion of competences suggests that the curriculum of all architecture school must be competence– based programmes. Conrad (1978:36) further adds that such a curriculum should contain three basic elements:

- An overall statement of the competences to be acquired
- Sets of evaluative criteria for each competence which defines the proficiency levels required for successful attainment
- Sets of experiences designed to assist learners to attaining the required competences

While all the five schools of architecture have tried to adhere to the requirements of the NSB 12 stipulations, it is not evident from their curricula that they have specifically tailored their programmes to the requirements of the competence–based model. While schools of architecture are aware of the competences required by NSB, they have not been specific in designing the competences to show the proficiency levels through which learners should progress before they are declared to have acquired a particular that competence. In all schools' handbooks, there are no indications of development levels or learning units for each competence by which a

learner can be judged to have acquired the required competence (Conrad.1978: 39). It becomes difficult, then to assess whether each school meets the requirements of NSB 12 without having to interview the learners or their tutors.

One method of assessing would be to link every particular outcome with modules that are closely related to it in terms of title and description. This is the method used in this study for the undergraduate programmes because of the relative ease in linking outcomes to development levels that is, the course-modules. It must be acknowledged though, that this is not in itself a precise method of linking competence to a learning unit or module. A more precise method would be to examine individual study guides or to speak to every lecturer or tutor who are ultimately responsible for translating the outcome into learning units.

In the professional programmes, linking the required outcomes with development units is a more challenging process because the outcomes are more complex and may not be reduced to one or two learning units. For instance the outcomes like, “*to Demonstrates self- directed, systematic, independent thought and practice*” and “*to Reflect and act upon a wide range of learning strategies, both existing and innovative*”, cannot be linked to any single learning unit. How is it to be measured? This illustrates the inherent problem of competence- based curricula – that adequate measurement of competence levels is not straightforward let alone achievable (Conrad. 1978:43).

Further if we examine an outcome like “*to work with peers, in group and is also able to work directly with outside parties in a professional manner*” (Teamwork Outcome) one cannot readily ascertain the extent to which architecture schools teach or promote this competence from their curriculum content and structures because there is nothing in their curricula that shows the proficiency levels in teamwork to which a learner in architecture is exposed to. There is nothing in all architecture curricula that shows what the learning units in Teamwork outcome are as compared to, for instance at straightforward proficiency in Construction Technology or History of Environment. Outcomes such as Teamwork remain ambiguous and their teaching and learning are at the mercy of lecturers and tutors. The reasons why this is so could be found in examining the relationships or indeed the lack relationship between architecture schools and other schools in the universities. Architecture schools on their own are less capable of ensuring that their learners achieve these important competences. The faculties of social sciences, education or humanities could provide answers with regard to how outcomes like Teamwork could be achieved because of

their history of constant engagement with society. That entails a position for architecture schools of giving up some of their domain- i.e. total control of the studio to allow knowledge from other disciplines to engage with the discipline of architecture. Token modules like Sociology for architects do not serve the wider interests of the learners and may even contribute to reinforcing old practices within the discipline of architecture. Integration of these “peripheral” competences needs to happen on a wider scale within schools. It is for the above reason that the analysis for the professional programmes in architecture to find out how they were meeting the outcomes as stipulated by NSB 12 was not done.

2.14. CATEGORISATION OF CURRENT CURRICULA OF VARIOUS SOUTH AFRICAN SCHOOLS OF ARCHITECTURE

The analyses of all the five schools of architecture have given an indication of the main issues, factors of change in the dynamics of curriculum change in South Africa. There are some important conclusions that can be drawn from the insight gained.

It can be stated that the survey indicates that the organizing principles of curricula in architecture school principles are twofold. Firstly there is the predominance discipline based knowledge- the traditional knowledge- that informs the curriculum design process. This, the schools have inherited from their traditional models of architectural education based on the twentieth century Bauhaus Movement and nineteenth century Beaux Arts models of architectural education through the British colonial education systems. All schools of architecture reflected modernist philosophies of curriculum models. They are well thought out, planned almost simplistic. Their avoidance of the negative concept of learning, favours the financially rich and powerful in society. This means that the problems affecting the poor of society do not constitute a large part of existing architecture curricula.

The second principle of organizing curriculum is based on the competence model that the South African Government has instituted through the SAQA ACT and its regulations. These are the two predominant principles of organizing curriculum. Of the two, the second principle has only been partially implemented since many of its characteristics, as argued by Conrad (1978) and shown by this study are not identifiable. For instance, as stated above, achievement of certain competences in the absence of definable learning units, which is the basic requirement in competence-based or outcomes-based curricula, is diminished. Schools of architecture have not comprehensively undertaken the rewriting of their curricula in

terms of competence-based principles nor have they used the opportunity to presented by SAQA to schools, as Teymur (1995: 57) advises, *...to move away from pre-defined or extra-educationally validated 'degrees' to a system of learning that is flexible, adaptable, experimental and multidisciplinary at every level...*

Further, none of the schools has explored the full potential of competence-based curricula i.e. other ways of teaching, learning and producing architectural knowledge as allowed by this organizing principle.

Accreditation bodies are evidently the main enforcers of change in South African architectural education. All schools of architecture have since 1994 have sought accreditation approval for their programmes because of the international recognition that such approval brings to programmes and the subsequent appeal of such schools to prospective learners of architecture. The accreditation bodies' comments on architecture schools and education are wide and varied. In terms of curricula in all the five school of architecture in South Africa, accreditation bodies concerns can be summarized as follows:

- There are problems with integration of knowledge particularly between core architectural course modules and the support modules offered by other departments as well as between the design studio and other core modules like construction. Compartmentalization of knowledge is prevalent.
- Synchronizing methods of teaching support course-modules with methods of teaching the Design Studio.
- There are problems with maintaining studio culture in most schools in the light of security but more importantly with increased computer use learners are less likely to use the studio as it was done in the past.
- Utilization of computer technology especially as design tools has been limited and is strongly advised.
- Housing as an important area of study within education for architecture is not receiving adequate emphasis.

- Pressures on architectural staff to be involved in research have led to tension in maintaining the traditional methods of teaching design. One to one contact with learners is increasingly difficult to achieve.
- Relevance of curricula to regional context, which most schools seem to have attained.
- Language and enrolment of black learners in architecture programmes were critical to transformation in schools and practice.
- Developing analytical and critical thinking as well writing in learners
- Learners' course modules load and overload and its implications for design and the learning process as a whole.
- The disparity in allocation of credits between design and support modules because of time spent of design.

The issues outlined above illustrates the influence of accreditation bodies have over schools of architecture regarding, not only in curriculum change, but also the whole processes of management schools and education of architects in South Africa.

Arguably accreditation bodies have been and still are the most dominant sources of change in architecture schools in South Africa. The fact that most schools of architecture have received continued recognition of their programmes is testimony to the importance with which schools uphold accreditation bodies' ideals.

The analysis of curricula of architecture reveals that most schools have developed curricula that addresses the needs of the profession successfully hence their approval by accrediting bodies. Teymur's (1995:56) comments on recent innovations in architecture schools is more poignant when he states that

"The most serious feature of many of these innovations is that little or no educational, pedagogic or epistemological reasons are cited for either changing the existing systems or introducing new ones..."

What is not clear is whether these re-written curricula are meeting the requirements of the learners needs in the wider changing society especially where changing jobs

has become the norm than the exception. How should knowledge be constituted and taught to prepare learners for practice in a less certain in working environment?

2.15. CONCLUSIONS

It has emerged from the above discussion of architecture schools curricula responses to changes in the South African society that:

- content in architecture schools' curricula has continued its strong emphasis on the traditional core course modules as the majority respondents indicate. They reflect the modernist type of curriculum, which has purposes, experiences, methods and evaluation, arranged in a logical and sequential manner. This means that schools of architecture continue to teach what they have always taught even though the need for teaching other knowledge has been increasing over the years. This indicates a strong insular tendency inherent in architecture schools.
- the changes proposed by South African government through SAQA have been responded to by school in a manner that continues to sustain the traditional modes of learning and therefore the manner in which the profession engages with society. Schools of architecture's responses to curricula change continue to be dominated by the demands of the profession through accreditation system. Therefore it cannot be said that schools of architecture produce new knowledge, which is traditional the function of universities.
- the ideas of a post-modern curriculum are similar to the character of the transformational OBE curriculum. Therefore it is recommended in this study to the adopt the post-modern philosophy to be part of an eclectic approach to architectural education and curricula reform that is appropriate and more capable of addressing the needs of an eclectic, pluralistic high tech-information led society.

The general finding of this study is that schools of architecture predominantly produce graduates for practice. Society has in the meantime evolved and is demanding many different types of architecture graduates which schools are unable to produce because, fundamentally, schools have not changed their teaching and learning systems and worse still, schools are receptors of new knowledge- they are not the creators of new knowledge that will see the architectural profession increase its influence in society by diversifying its role. If the architectural profession is to be more relevance in society, schools should be the places where the search for new areas of influence should be initiated. The way the next generation of architects are educated is going to be through curricula that engages with the society's contemporary issues.

Therefore, the discussion of the various schools' architecture programmes, curricula and their respective organizing principles support the proposition that all current curricula in the South African schools of architecture have some identifiable curriculum model.

CHAPTER 3: CULTURAL CONTEXT, EDUCATION AND PRACTICE ISSUES

As a profession is a social-cultural construct whose contours are constantly shifting ...”, turbulence in professional education is in fact a sign of strength.

3.1. SUB- PROBLEM 2

To determine distinctive cultural issues of the South African society that architectural education and its profession must accommodate and reflect.

PROPOSITION

A comprehensive understanding of the society is essential to ensure a built environment that represents all cultural groups.

3.2. OVERVIEW OF CHAPTER

The first part of this chapter begins by defining the cultural context within which architects must operate in society. Issues that are pertinent to the developmental and multicultural context of South Africa are raised with a view to defining the unique characteristics and qualities that architects should possess in order to function effectively in such a context. The type of models of education that are required to produce architects who can effectively work within the South African context is then discussed.

In the second part the views of practicing architects from a questionnaire survey are discussed in order to establish the nature of the educational experience that architects as students undergo in architecture schools and the culture it fosters.

3.3. CHANGE IN SOCIAL ISSUES.

Culture is said to thrive only in a climate of freedom for the individual to express them without being constrained by group identity. It is from such situations that people can create new meanings and insights of their surroundings. To conserve culture is to stifle all initiative necessary for new culture to emerge (Manganyi, 1981: 70). It should also be recognised that, in drawing up multicultural curricula, not all cultures can be accommodated for various reasons. The guiding criteria for what has to be included

in a curriculum must, as Lynch (1984:17) says, embody the qualities of rationality, objectivity and universality. Such a curriculum would ensure a greater understanding for its students of the wider society's activities whilst allowing for the development of the local or regional functions.

South Africa is at a transitory stage where a lot of initiative has to be generated to create a new culture to which people of all races must be part. This cannot happen if left to its' own devices. The educational institutions-in this case architectural schools-must exhibit conscious efforts through the use of the curriculum to help learners of architecture to interpret the built environment to reflect the diverse cultures of the South African in society. Critical issues facing South Africa should be given a chance to be debated in schools through curricula that prepare the architects for their role in the built environment in future.

By 1985 more than half the population of South Africa lived in urban areas. This was mostly as a result of rural-urban migration, a characteristic typical of developing nations. About 40% of South Africa's population lives in the four largest metropolitan areas. According to the Sustainable Environment Report of 1985, by the year 2010 two thirds of the people will be living in urban areas. Urban Foundation (1985) predicts that some of the biggest inflows will be from areas previously known as homelands-which are of rural character- to the metropolitan areas. This movement alone will contribute one-third the expected urban growth rate, the rest (of the two thirds) being the natural population growth. Most of these metropolitan areas will, according to the Urban Foundation report, approximately double their population in a 25-year period-1985-2010. If these figures are considered from a race distribution point of view, the percentage of white, Asian and coloured South Africans living in urban areas is expected to remain stable. The black population in urban areas, which was 8.5 million in 1985, is projected to reach 23.6 million by the year 2010. That represents a 270% increase. More importantly though is that for a significant proportion of these, accommodation will be mostly informal. Garages, backyard shacks and squatter settlement will be their accommodation. The current housing shortage and demographic trends will not help these issues. More likely the proportion of those living in poorly built and serviced dwelling will increase if not double in the next five years (Sustainable Environment Report, 1985). The situation outlined above raises important issues for the development of skills required to provide upgrading of services and conditions in informal settlements in urban areas. But the challenge is even greater, in that there still is a huge rural population whose

need for better health, education and housing has to be met. This is not only to help stem the rural-urban migration but more importantly to help realize the aspirations of the rural community in new South Africa. Availability of schools and hospitals is an important aspect of their basic rights and aspirations.

Future architects have to contend with information-based, multicultural societies, to be able to cope. The education of the architect has to shift its emphasis from modern day- architectural education that emphasizes the artistic paradigm, which is characterized with imagination as sources of information and feeling as a basis of judgment (Stamps, 1994).

Studies have shown that in some American schools, the studio time takes between one third to one half of the architectural students learning time - may be even more. Even when this is so, students are asked to provide solutions to their problems through three-dimensional space models-which are mostly visual at the expense of other real problems. In such instances their response to problems of society can therefore be expected to be not more than a reflection of personal visions. Such an educational background raises doubts as to its effectiveness to deal with the complex societies of the future.

Stamps (1994:106) proposes two issues inherent in contemporary society that will affect designers and their work:

- The increasing substitution of information for construction
- The necessity for coping with multicultural societies.

Information technology is now seen as a cost-effective way of doing things. The need for real matter models and physical people contact is being replaced by computer simulation models and telecommuting. Getting connected for architects in the future is imperative. Sources of information for future architects will increase and the ability to evaluate information effectively and accurately, to suit their situations becomes important.

The use of information technology breaks down the national boundaries - placing all peoples in a global economy – creating an opportunity for architects to work anywhere, with anyone in the world. Further, more and diverse groups of people are able to participate in decision-making in their society. Thus multicultural design is an increasingly important aspect for the future architects who will have to design for people whose values are different from their own.

Success for the architects will only come if they exercise high levels of initiative in effectively evaluating the information and understanding the various multicultural systems.

According to Stamps (1994:105), the present architectural education in the USA is artistic in nature and it emphasizes personal feelings about form organization in space. Stamps (1994:107) suggests that to the artistic model, should be added the philosophical system of Carl G Jung which presumes that people can think, feel, perceive, and imagine as individuals as well as in groups. The Jungian system postulates that the various functions stated above, have a tendency to inhibit each other. Stamps (1994) sees the need to provide future designers with a Jungian epistemological balance as vital for them to effectively evaluate the information-rich multicultural society.

In such a society the object should be to train architects who are flexible and adaptable to whatever the circumstances may dictate. It is argued that implementation of the Jungian system in the education of the designers will enable the students to develop their full potential. Using the Jungian system students can identify the basic notions of introversion, extroversion, intuition, sensation, thinking, and feeling and be able to use their initiative to align each process with their current interests.

3.4. CHANGES IN CULTURAL ISSUES.

The black population constitutes the biggest group of people in South Africa. It is also the group that has seen the most change in their social set up- from the traditional through to the colonial and apartheid periods to the post-apartheid era. In this period, forces that originate from beyond the tribal life have eroded their beliefs and ways that are grounded in spiritual forces of the tribes. While black peoples' beliefs have been eroded, the colonial and apartheid forces have not allowed for the evolution of new beliefs that address the needs for safety, security, belonging, esteem and self-actualisation (Motloch, 1991:171). The result has been a young black population that has not been acculturated into a lifestyle that expresses their real needs. Motloch (1991) states that the native South African still lives in an alienated environment because the meaning of the urban environment is determined by the first world white populace. While the devices that prevented blacks from attaining equal social and economic status were removed in 1991, it still remains to be seen whether this black alienation in the urban environment is true ten years after democratic elections. But this may be largely true if we follow what Teymur (1983) says about the type of architectural education in third world countries which is literally "taken" from a first

world context because none existed in the third world countries. This type of architectural education would most likely fail to recognise the real needs, perceptions and preferences of the native individuals.

Others argue that while interest in cultural heritage continues to grow, the young generation in the developed countries is unsure of what values they ought to adopt in their lives. They are caught in the rift between indigenous customs and western values, and for most, the latter choice becomes obvious because it is thought to represent “being developed”(Habraken, 1983:7).

But the problems of the South African society cannot be simply reduced to the accommodation of the real needs of the native population-which are recognizably important. The new South Africa is not a homogenous culture and answers to its built environment problems will be found if architectural design practice and education reflects on its' multicultural context. This casts uncertainty on the suitability of the objectives of the architectural profession and education. What and how should the students be taught? Originality, symbolism, form experimentation and peer group approval- the yard stick of traditional professionalism- are hardly the criteria on which to base architectural education in South Africa.

Students of colour in the USA are demanding a wider system of multicultural education that includes the their heritage, cultural contributions and issues. The main thrust of this approach is to find better methods or ways of presenting the diversity of the American experience to the diversity of American students (Davis. 1993:31). The perception of the built environment- by students from minority groups in America- is one that is dominated by a Eurocentric culture that excludes their role in history and participation in the creation of the urban form. Students want to relate to designs by architects of the same cultural background as theirs so that they can gain a better understanding of the cultural aesthetics that influence design. They recognise the need for their own role models. This will help them to discover not only the new ways of creating work that reflects the diversity created by the minority and majority cultural groups in one built environment but also their own roles as future architects.

In many ways the American schools of architecture with their many cultures are similar to South African schools - so that the study of intercultural architecture should form an integral part of the architecture curricula. Five issues that necessitate the writing of multiculturalism in the architecture program are identified (Davis, 1993: 37):

- The course should be one that draws its knowledge and makes links with leading architectural professionals, business leaders and scholars from Ethnic Studies in other universities.
- Students must be allowed to develop their own sense of value and learning initiatives than simply being recipients of other people's research.
- Teachers must act as guides to willing students to develop their personal learning initiatives. This calls for the lecturers to relinquish their dominant roles and assume an equal participatory stance. This model of learning –students teaching each other –is a necessary feature of understanding cultural diversity.
- The architectural education must endeavour to produce students with a high level of social awareness and knowledgeable in the diversity of experience of other cultures, so that they are better able to participate creatively in the changing profession and society.
- There is a need for more academics and students to take up research into the treatment of architects of colour and related subjects. This cannot happen without improvements in research tools, research sources and publications. This entails having electronic access from academic architectural libraries to national and private architectural archives and changing subject headings to allow more direct access to existing information on architects of colour.

The above suggestions, once incorporated into the architectural curriculum will ensure the development at an architectural scholarship that includes all American cultures, which in turn will attract more students to the architecture profession.

3.5. ARCHITECTURE IN AFRICA.

The architect in Africa is seen as an elite- contributing little to local community development- working for furtherance of the ideals of rich corporate firms, as is manifest by their luxurious Western buildings and life styles (Uduku, 1995). Early government policy, in the 1970s, of most African countries enabled large wealthy

multinational firms to sever indigenous architects' connection to social design, by providing large scale mass produced structures- schools, housing and health facilities- that were cheaper and more economical to produce but lacking both in architectural meaning and identity.

The schools of architecture's focus in this period were on western style architecture with little scope for the indigenous social needs. It is recognised that curricula of architectural education in most Africa countries focuses on the needs of 40 percent of the population living in formal parts and not the majority who live in informal or rural settlements (Uduku, 1995:23).

After independence most schools of architecture in former British colonies were established on the British systems of teaching architecture. Though the schools were established with a view to creating Tropical Architecture-with comfort and appropriate materials as the underlying theories- several problems were experienced. Because of the traditionally close relationship between practice and education, architectural firms in the newly liberated countries, adopted the "international style" which students in these countries saw as the "new" architecture, unlike developing their own architecture. Traditional architecture was taught as "heritage" course rather than being a basis for the creation of new architectural design for the newly independent countries (Uduku, 1995).

As the profession was still in its embryonic stage in Africa, most architecture students sat for RIBA examinations and had to work in the United Kingdom to gain accreditation. It was inevitable that African schools adopted western curricula and also that those African students who went to the UK for RIBA examinations, brought with them western ways of thinking and making architecture. Even when it was no longer necessary to go to the UK, education for architects did not become indigenous in content. Some changes to the curriculum were made to accommodate international requirements, mainly the American views despite more Africans being involved in architecture and curriculum development (Uduku 1995:23).

The architecture curricula in African schools of architecture have not included "Development Architecture" as one of its courses. While other programs like planning, surveying have evolved to include contemporary issues, architecture has largely maintained its traditional client-patron approach. The students of architecture in Africa perceive themselves to be preparing for work in practicing offices rather than in participatory architecture, which serves the greater part of the community.

In recent years, participatory development projects have been more successful in South Africa than in elsewhere in Africa with local groups making contributions to all aspects of development (Uduku, 1995:24). While the frequency of architects' involvement in such projects is rare, their role is defined by the formal institutions they represent and hence they are perceived as part of the government elite -formal and affluent. Fewer architects are involved in participatory planning and design.

Further the concept of the architect as a master builder and organiser of labour was new to most of Africa that had little tradition for organised construction until the introduction of western cultural influences. As a result, for most of the African society, the architect is seen as a member of the elite introduced by western cultural influences. The view is aided by the fact that the few architects that were practicing soon after independence, got huge projects that brought them immense wealth thus reinforcing their position as part of the elite (Uduku, 1995: 24).

It has been suggested that the appreciation for technical expertise for the building of domestic buildings in Africa has historically not been high because people have been able to build their shelters with relative ease. The balmy climate has given people the assurance that their buildings are not under threat (Mazrui: 1986). Further, economic strife has forced people to opt for cheaper ways of building their dwellings (Uduku.1995).

In South Africa, the former white areas and formal townships for blacks were all designed, based on European precedents that the professionals who either originated from Europe had brought with them to their architectural practice or they simply "borrowed " western ideals. The architect was part of the professional team assigned the task of designing the formal settlements that had been sanctioned by the government from the very early stages. This was however not the case for the shantytowns which relied on individuals to do their own building with no standards with which they were to comply (Uduku, 1995). The result for the black population was a mixture of European and African influences. Even here the architect was still part of the government elite.

For South Africa the apartheid state ensured that architecture was an elite profession by there not being an institution to train non-white architects unlike other professions like medicine.

Uduku (1995:23) suggests that western traditions and education coupled with local factors have resulted in the African architect who is unable to interpret traditions in a modern context hence; the architect is seemingly seen as not relevant to the

common African person. He further suggests that changing to a more relevant architecture has to start with changing the curricula of schools of architecture and should include the following four points;

- Architectural significance.
- Radical changes in forms of architectural practice and design.
- More local involvement and consultation.
- The evolution and development of indigenous participatory planning policies in construction projects for various regions in Africa.

Contemporary African design should include the interpretation of traditional architecture as a way of emphasizing the uniqueness of African architecture in the global context. The profession should be understood in terms of its impact on the local economy: that the reliance on imported materials, labour and technical know-how, not only drains the already poor economies but also stifles local initiative (Nnamdi, 1997:344).

The architecture profession must make its' services more accessible to the public as a means to include more of the local public in the building process and shift the power structure of relations to a central consensus, than be vested in one group; the professionals or the local people. The evolution of a good development theory based on the appreciation of the unique nature of the African societies is an essential ingredient for the successful participatory planning. These changes will be the basis on which future development initiatives will take spring from.

3.6. ARCHITECTURE IN LATIN AMERICA.

Latin American architectural expression has, from the nineteenth century onwards been strongly influenced by the European architecture. This has chiefly been the result of architects, like their African counterparts, who underwent training in Europe (Gilhome 1983:50,Wakely 1983: 38). Though this may be so, there exists some examples of indigenous architecture in some countries of Latin America and its further development depends to large extent, on the type of architectural education.

Architectural education was only introduced in Latin America from the mid-1900s onwards and based on training structures similar to those in Europe-Bauhaus. While these systems have produced impressive architecture and competent architects, it limits the students' potential in that it is confined to the design of only familiar objects and avoids addressing the processes and the real contextual problems. Students see

solutions to problems in terms of buildings than the real needs (Wakely 1983: 38). Problem identification is not seen as part of the design process. Emphasis is on the application of building techniques for production of buildings. According to Wakely (1983), there are two reasons for the above scenario in Latin American schools of architecture:

- Professional conservatism of academic staff and;
- The extensive use of part-time teachers whose interest is production of competent design drawings than wider understanding of architecture.

For the graduate of this kind of architectural education, the private practice is the ultimate goal and the then, rapid rate of economic growth of Latin America enabled such practice. This is however no longer the case as population increases has reduced the available resources making the chance for unemployment of architects a real one. The issue of slums and shanties combined with social reform in some countries and universities led to the raise of social architecture with concern for the public and community welfare. Though the academics and students were involved in projects in the shanties and slums, few schools of architecture adjusted their teaching to include such studies in their curriculum. This change towards social architecture, in mid 1970s, was however short-lived as progressive governments were overthrown. Most schools in Latin America attempting to redefine the role of an architect in society lapsed back into the non-controversial conservative curricula (Gilhome, 1983: 50, Wakely, 1983: 44).

Such curricula, according to Wakely (1983) tends to encourage an arrogance that architects can acquire skills and have the reliability to design for those people whose lifestyle and aspirations they do not share and have little appreciation. Most Latin American schools of architecture perceive the role of providing housing to be the responsibility of the government even when its failures are apparent or evident. This view is slowly being replaced by a view that the government should involve itself only in the provision of land, infrastructure and credit. The architect, in such situations, is seen as an enabler of the users' initiative-a view considered as not reflecting the real character of architectural practice because there is little opportunity to show creative artistic skills. Other architectural schools regard the housing issue as a social science that falls not in their realm of study and therefore see no reason to include it as part of their curriculum. But others argue that the nature of an architect's education, with slight adjustments- addition of sociology and economics to the architectural curriculum- prepares the student adequately for their role as enablers in the built environment. Secondly as the number of architects increases, a real chance of

unemployment for architectural graduates in Latin America arises. This begs the question of redefinition of the professional role in society as it seeks to shift its service emphasis from the elite few, to the wider community (Wakely 1983:45). Such a move, it is argued, will result in an authentic architecture that expresses the cultural dynamism and social aspirations of Latin America.

3.7. CHANGES IN THE ARCHITECTURAL EDUCATION

Third world countries, of which most of Africa is classified, have no history of architectural profession (Teymur, 1983). Hence the definition of the architect and his/her role in society is an adoption of the professional ideals from the Western society-Europe and North America.

South African architectural education like most, in third world countries, is modeled along the European-particularly British (Mills. 1993:15)- and some North American models of education. These European and American models have evolved specific relations that are appropriate and make them readily applicable to their societies of origin. Their building traditions and delivery of their built environment are not similar to the third world traditions (Teymur, 1983). The simple adoption of these models to the South African architectural education that operates in a socially, economically and culturally different society from those of Western societies potentially creates problems, some of which may not be obvious. Teymur (1983) states that there are different sets of complex composition in both the third world and first world countries that make the adaptation of one type of architectural education in third world countries prone to failure. He identifies four factors that should be considered when considering architectural education in both first and third world countries. These are as follows:

- The unevenness of the respective societies
- The unevenness of the distribution of, as well as the history, of building in different cultures and social groups.
- The unevenness of the ideas, values, tastes and explanations of the social and architectural realities-both physically and conceptually.
- The unevenness of the ideas and theories about (a), (b), (c) as the proper objects of any serious debate on architectural education.

There exists a tendency of defining the role of the architect in the South African context to be the same as that of an architect in developed countries (Mills .1993). While there may be some similarities in what the architect may do in both contexts, significant differences arise as a result of the differing socio-economic, political, religious and cultural values (Danby.1983).

Secondly, in defining the role of the architect as dictated by the Western education models, there is likelihood of missing the thrust of the real issues that the architect in South Africa should be addressing. The high population growth-rate, high-income disparities between the rich and poor and the largely unemployed or underemployed youthful population define a society that requires greater innovation from architectural profession than simple adoption of western principles. Architects have to interpret the political needs of the redefined society in the physical environment if they are not to be viewed as being only interested purely in aesthetics of buildings. What appears to matter most to most architects is whether one is a good architect -in the aesthetic sense- or not (Mills. 1993).

The Sustainable Development Report in South Africa of 1991 identifies some of the real problems requiring attention as:

- Finding solutions for housing informal urban dwellers
- Improvement of traditional rural housing
- Development of technologically appropriate buildings for education and health facilities in rural South Africa.

While these issues may be seen as having little room for aesthetics-which European and North American architecture schools emphasize- they represent the real challenges facing today's third world architecture schools. In this respect the architecture schools in South Africa should aim to provide a curriculum that equips its graduates with knowledge to solve not only the aesthetic issues but also developing practical technologies in construction applicable to its society (Hallen. 1995:48).

Recent architectural studies in Britain have shown that what the schools of architecture emphasize in their curriculum influences its graduates with regard to what they may specialize in their profession (Symes et al 1995).

Another issue that has characterized debate on architectural education is that of supply and demand of architects in the building industry. Studies in United States of America, particularly Florida, have shown that in the past twenty years the architect to people ratio has increased from 10 per 100 000 to 27 per 100 000. This is despite a noticeable reduction in the number of buildings designed by architects (Schon

1985:1). This seems to suggest that there is some insensitivity, by schools of architecture, to fluctuations in demand for architects as dictated by market forces. This probably has to do with the way architectural schools perceive their education. Other than the obvious function of producing graduates who later in life become professionals, architectural education is being seen as another form of the liberal arts- that some students pursue architecture with no intention of becoming practitioners. This is evidenced from research figures that indicate only 30 % of the graduates in architecture successfully attain their professional status (Schon 1985:1). From the above it can be inferred that schools have a dual role in the provision of architectural education: firstly preparation of students for practice in the field of architecture and secondly general education for those who pursue it as an alternative liberal art.

This has major impacts on the architectural curricula that schools should follow given the limited time with which they operate. On one hand architecture schools have to provide a specialized learning base for students aiming to be professionals and while on the other hand it should provide general education for those who may not practice.

Rinehart (2003:1) argues that architects are unprepared for the cross-disciplinary dialogue found in contemporary society because of a lack of a conscious engagement with other fields on how the various professions should relate to each other. She attributes this lack to the tendency of architecture schools to focus on producing graduates for practice rather than engage in intellectual understanding of relations between architects and other professions in the built environment. She further adds that the problem is compounded by the general perception of schools of architecture, as being “professional programs” whose scope does not include philosophical and epistemological underpinning of academics. Architecture schools are perceived to be artistic than intellectual in nature. According to Rinehart there is a schism between architecture schools on one hand, which seek to produce graduates with the aim of them, becoming design practitioners, and the universities on the other hand, which seek to produce graduates who pursue knowledge for society?

Rinehart (2003: 2) and many others see architectural education as failing, if it equips students only with the skill to solve task-oriented problems. In an increasingly complex world, education for architects should equip students with intellectual skills for them to integrate problem solving with other fields. Max Bond (in Rinehart: 2003:2) adds that liberal education that gives the students economic, political, social and cultural context, must be taught in schools of architecture.

3.8. CURRICULUM IN CONTEXT

Curriculum can be described as a way of organizing human learning experiences with the purpose of improving the individual and ultimately the society as a whole (Grundy.1987: 5). Education, in modern complex society, is the main way to convey to the young people of a society its' culture: knowledge, beliefs, art, laws and other habits it practices. An appropriate curriculum is one that reflects the culture of a society. It therefore necessary to carry out a cultural analysis in order to have a holistic understanding of real activities of a society. To analyse those aspects that describe the culture of any society Lawton (1983:31), suggests using eight structures:

- Social Structure/ social system
- Economic system
- Communication system
- Rational system
- Technology system
- Morality system
- Belief system
- Aesthetic system.

Lawton (1983) adds that these systems are not exhaustive and more could be added, but they underline the essentials that describe all human beings as a common group. Most of these systems, if not all, influence architecture and its teaching/learning processes. Technologies, communication, social and economic factors, as seen above, exert more powerful influences than others do. Perhaps at this point one may look at the general context of architectural curriculum and its objectives in South Africa.

All knowledge is generated and discovered in a social and historical context. The education system of any society to a large extent reflects the ideological value systems and cultural prejudices of the dominant social groups of that society. In Africa, colonial education reflected colonial values, or broadly negated African values, which were considered primitive and inferior to those of the West. The apartheid ideology in South Africa gave rise to an education system that promoted the idea of racial inequality. Similarly university education in Africa can, to a large

extent be said to have suffered the same fate and thus produced graduates who have difficulties realizing their full potential in a developing country.

From a graduate in developing countries it is expected of them to perform a wide range of functions and to occupy a wide variety of positions, which, may not be connected to that person's area of specialization. It is required of them to deal with people from all aspects of life and be aware of the politics, culture and other aspects of society (Ngara, 1995:76). The graduate, as Ngara puts it, " should not only have a have a sound grasp of the knowledge in his or her own field, but should also be able to cope with related and sometimes totally different fields, and to have a general understanding of the world."

Simply going through university education does not ensure that the graduate has acquired the necessary education described above. This comes about when the student has the experienced effective learning that is backed by an appropriate curriculum. According to Ngara (1995:78) curricula design appropriate for African students and their society can take into account the following facts:

- the accepted conventions governing the content and organization of knowledge in African institutions of higher learning derived from the Western traditions.
- there is a common core of knowledge which is the same for all cultures- African, European, Asian, American and so on;

However, if African institutions of higher education are to provide an education which is relevant to the needs of Africa and which speaks to the problems of the continent, their curricula should as far as possible be informed by the African environment. This may entail a critical review of the accepted conventions governing the content and organizations of knowledge in certain disciplines. The African curriculum content should then be one that is made up of a common core of knowledge shared by all university students in a particular discipline but shaped by the needs and circumstances of the African context. Mama (2004) adds that Africanisation of the curriculum has little to do with the identity or including the cultures of Africans in the curriculum, but has more to do with understanding the context of Africa in which knowledge should be produced and learned. Caution is advised in the process of Africanisation of the curriculum. Mama advises that Africanisation of the curriculum is more demanding than simply adding to existing curricula African cultural knowledge. Apart from context it requires identifying that indigenous knowledge that can be as

oppressive as well as other influencing factors like market forces (Ratele: 2004). Ratele suggests that Africanisation could be included in the curriculum through community participation projects. What is required, he adds, is to address issues of intellectual integration between Euro–centric knowledge and the African knowledge to produce an authentic contemporary African culture.

3.9. DESIGN OF DEGREE STRUCTURE

In countries such as United States of America and China it has long been recognised that the curriculum for university education has to be based on philosophical concepts in order for students to be given a sound general knowledge and understanding of the world outside his or her field of study. This is unlike the British system of university education that has been criticized as teaching narrowly specialized programmes, a feature which many Anglophone universities have failed to move away from (Ngara.1995: 82). Most African universities have over the years attempted to define their own curricula with little success. Ngara (1995:85) proposes, that the development of an appropriate curriculum for an African University should be guided by at least three things: the needs of society, those of the student and by a view that education should develop in the learner those skills and qualities which enable him or her to help society to realize its wishes and needs. Thus such a curriculum must be designed with the following objectives:

- It should enable the learner to acquire a sound grasp of the content and analytical skills that go with a particular discipline or disciplines together with an appreciation of some related disciplines.
- It should help the learner to develop an enquiring and critical mind, sense of good judgment and the capacity to act in a rational manner.
- It should promote intellectual and physical development and help the learner to appreciate the role of both human mind and hands in social development
- It should develop the skills that are necessary for playing a leadership role in society- communication skills, management skills and the ability to solve problems in a rational manner.

- It should help learners to understand the world they live in (both the natural and social world) and develop in them a sense of cultural identity, patriotism, and social responsibility:

In short, university education, and consequently the university curriculum, should produce rounded and fully developed persons who have a sound mastery of knowledge in their special fields, an adequate grasp of the related disciplines, a sufficient understanding and appreciation of both their natural and social environment, both locally and globally; men and women who have a sense of responsibility and commitment to their society and who possess both the practical skills and a critical mind. In other words, university graduates should be developed in mind, body and social consciousness, and should be responsible and adaptable. They should be people who have a philosophical conception of the world, not starry-eyed theoreticians, but rather philosopher-technicians- people who because of they possess developed intellectual faculties and practical skills, are capable of transforming their society.

To be able to realize the above mentioned objectives Ngara (1995:88) proposes a model of a curriculum containing the following elements;

- one or two core disciplines or majors depending on whether the students follows a general degree programme(which would require two majors) or an honours programme(for which there would be one major);
- some courses from a second or third subject; general education courses some of which could be compulsory for all students (Category A) and some optional (Category B).

The compulsory or Category A courses, taken principally at first year level, might comprise the following:

- Environmental Studies or Human Ecology;
- Social Studies; i.e. Political and Economic Studies;
- Physical and Health Education; and
- Communication skills

The optional courses, Category B, which should be available at first year level and at least one of which should be taken by every student, the choice depending on the faculty in which they are registered, might include:

- Science, Technology and Society;
- Literature, the Arts and Society;
- An introduction to Philosophy; and
- Computer science.

The above structure calls for an integrated approach to the way knowledge is organised in a curriculum. The aim should be to show the links that exist between knowledge, the individual and the world. By making the student able to perceive these connections it can be expected that they will use their knowledge to interpret and effect change that is relevant in their society.

The South Africa policy statements on higher education have not been followed with practical statements on the curriculum. Kgaphola (1999) identifies the modern graduate as a potential job-creator than a job seeker and these skills, as important as they may be, are not enshrined in the learning system.

Two issues that necessitate the need for change in the educational systems are: firstly the need to be competitive on the world stage and secondly the need to meet the specific social needs of South Africa.

The need to restructure the educational system is thus an obvious reality as South African aims to take its place in a democratic world. What is not so obvious, is whether the higher education system-the curriculum in this case- has adjusted itself to produce graduates who will tackle the new challenges from an informed point of view rather than rely on personal or group ideals. The Green Paper (1996) and White Paper 3 (1997) on Higher Education Transformation point out that:

The role of higher education, as a provider of graduates with multifaceted skills, notably being intellectually developed, with an ability to function in a knowledge-driven economic landscape, and create knowledge through scholarship and intellectual inquiry

The graduate of today faces an uncertain future. Jobs are not guaranteed. Graduates are expected to create their own jobs. Further the business sector expects graduates who possess communication and economic skills besides their specific area of qualification. Yet it remains to be seen whether universities teach their students those necessary skills for survival in the job market especially those not in the schools of commerce or business (Kgaphola, 1999: 19). This twenty-first century view of the world requires a shift in the curriculum contents for undergraduate studies. The

preceding views should however not dominated the greater mission of the universities but be an essential part of the process. The scenario of university as observed by Kgaphola (1999:38) is:

- The student numbers have changed
- Curriculum formats and teaching regimes have not changed in spite of changing student demography
- Technology improvements and increase knowledge output have increased course content with a corresponding increase in time
- As an offshoot of the above mentioned problems first degree problems have become mechanical rather than formative and educational in context
- The result has been a crisis of the legitimacy of degree programmes in terms of a lack of the fulfillment of expectations of the students, graduates and society.

According to Kgaphola, (1999: X) some change has taken place in some South African universities' curriculum by way of modularization. Though some improvement and flexibility in curriculum have taken place, this has simply created new definitions of degree programmes rather than addressing the real issues. He proposes a new model for higher education that should contain the following:

- A shift towards making higher education development based.
- Education should focus on the dual role of giving the learner a base for further studies and also for creating resilient professional cadre
- Emphasis should be on the broader aspects of research –in higher classes- than specific ones
- Communication and technological skills requires an early introduction in the programmes with longer duration
- Students whose specialization is information technology should be offered modules in humanities and social sciences.
- Management should be introduced at the final year level to give students an insight to life after the classroom.

The role of the architect in the twentieth century has been described as one of a specialist in a group of specialists as acting to exercise their influence in the built environment. Unlike the traditional nineteenth century architect -master builder- the modern architect's role is confined to the building structure and its cladding while others specialist tackle various aspects of the building. While these changes -the result of industrial and technological changes that shape new relationships in society- are seen to encourage specialization, it is apparent that the need for someone to oversee and co-ordinate the various aspects of architecture arises (Brady. 1996.32.). The architect because of the disparate nature of his/her training is seen as the best-qualified individual to oversee the other specialists. The training or education of architects should thus cover both the areas –specialist and generalist- for sustainable design and holistic approach to architecture. But others warn that training students of architecture for specialization is training them to be structurally unemployable (Stamps, 1994:109). They agree that future architects should be trained to be flexible and adaptable so that they can assimilate and abandon specialties as situations dictate.

The above views of the modern architect have implications for the way architecture courses are named, focused and structured to reflect the education of architects as a generalist and a specialist. There are also questions as to what levels the specialization aspect should be taught to an architect. Brady (1996) argues that, in America, specialization offered at different levels in the training of an architect, is counter productive for a holistic approach to architectural education. She identifies three issues that an architecture degree structure must exhibit to enable the multidisciplinary and specialist aspects to be understood. These are as follows:

- Education Standard Minima- a basic professional degree that introduces a wide range of issues for the student to understand the larger context within which specialization occurs and allows him or her to practice.
- Educational Specialization- this must be done after the first degree. The student must have at least two years experience working in an architectural office. This degree does not replace the first degree.
- Educational Titles-this identifies the type of architectural education and levels. Professional degrees should use the term *architecture* in their name title. Non-professional degrees should use other terms that show their focus of study.

One of the major problems of architecture curriculum structures is the lack of integration between academic and studio courses. Yet it is recognised that the success of the studio as a forum for integrated critical thinking and design depends on the curriculum structure. Linear curriculum structures work better when they are used to introduce students to elementary aspects of architecture. Beyond the early stages of architectural education, the linear approach begins to show limitations, as the higher studio projects require an integration of information from disparate courses. The scheduling of courses becomes a critical factor, as the students in higher levels need to know certain information before they can tackle a project. In a linear curriculum structure the academic courses may be offered in the same term time as the studio project that need to be informed by the courses. It becomes difficult for the students to integrate this knowledge into the project as the need for the information and the delivery of the course(s) may not coincide.

This integration of academic and studio work is important for the creation of knowledge-based architectural design so that the traditional curriculum should be adjusted to reflect this importance. This entails a careful study of the number of courses taken in a term/semester and reconfiguring of the sequence of delivery to indicate the relationship of the studio and lecture. A shift from a linear to a modular/cyclic curriculum that facilitates both the focus and integration must address the issues of course load, the effort and sequence (Brady.1996: 38).

Architectural education is viewed as a program whose students are overloaded with courses such that their ability to synthesize information is not optimized. Very often students of architecture tend to just cope with the situation than having real time to reflect on the wider context implications of their education. Reduction of courses is seen as a remedy necessary to for this reflection to occur.

Effort and time spent on studio courses is much more than on academic courses and though studio courses are given more credit, a lack of accurate reflection of this effort exists in architectural education course credit system. This discrepancy avoids a course credit overload but results in class overload for the students. Across the years the credits are not applied consistently with the lower years getting the least credit for studio.

Development of knowledge-based architectural education is dependent on a curriculum structure that allows the student to acquire the academics in good time so as to apply it to the studio courses. Brady (1996: 38) suggests a split-session term as

a modular cyclic approach that achieves the course integration without the need for relaying on schedule co-ordination across courses. A split term allows the reduction of the number of academic courses that are taken at the same time as the studio course to a manageable level. In essence the first half of the term introduces the course material; the second half is an exercise for the students to test their knowledge by doing the projects. This split also sets a wider interpretation for both studio and academic staff involvement in their work.

Studio experience provides an opportunity for a holistic understanding of architecture because it combines theory and practice that Vitruvius labels as essential for an architect's education. Vitruvius' (Morgan, 1960) model of observation and experience forms the basis of architectural education. But while Vitruvius' model of observation and experience, enables students to understand the relationship between the disparate part of a whole it needs to be augmented with a critical understanding of the whole process- from the different points of view and in different contexts (Brady. 1996:40).

Brady (1996) suggests that the ability to distinguish the "Know how" from "know why" is vital for an integrated approach to sustainable architecture. Sustainable architecture entails a critical evaluation of the past and reacting to the immediate demands with careful consideration for the future.

Others propose that sustainable architecture can only be achieved once business recognizes and practices integration of economic, biological and human systems-that these are cyclic rather than linear processes. Issues such as the real cost of building must be looked at not only from the production cost but the cost to the environment and the people. Building structures must have minimum life spans while taken into account the economy of producing them.

Brady (1996) argues that the basis of architecture that endures requires a learning process that reflects an integrated, sustainable approach to design and life as part of the studio experience. This experience coupled with an appropriate curriculum structure strengthens the importance of holistic design in architecture. The current linear approach in architecture schools does not encourage students to embrace the holistic design process, but results in superficial investigation of design problems, increased workload and stress. The modular cyclic approach is seen as a system that enables a coherent understanding of related design issues unlike the disparate linear approach that characterizes most schools in United States of America. Four advantages of the modular cyclic approach have been identified (Brady. 1996: 38):

- It provides (more) time and course sequence that is necessary for comprehensive studio.
- It offers an opportunity for team-teaching in the higher-level comprehensive studios and relieves faculty members from being experts in all related areas.
- It identifies a group of faculty from related academic courses that are available for consultation on studio projects in their area of specialty.
- It offers an opportunity for faculty to offer a related course during the studio session when the degree of difficulty or level of development requires more input.

The studio is recognized as the ideal location for developing an ability to deal with rapid change as demanded by the profession and society in general. But the relationship between practice and academy raises fundamental question that have implications for the studio experience. It is acknowledged that the architectural profession continually responds to changes in society. Architectural studio experience should be one that offers students an opportunity to explore and examine diverse approaches from various viewpoints in order to prepare them for the complexities of practice. This involves the careful integration of architectural theory and practice in the studio experience that will redefine the studio emphasis from discrete building types to a wider understanding of the dissimilar aspects of architectural projects with varying contexts and restrictions. It is this that will develop the ability to deal with future trends and changes in the profession (Brady.1996: 45).

3.10. FINDINGS

The above discussion has revealed the nature of education for architects and how it reproduces its' profession and its' relationships to society. It is clear from the discussion above that a universally applied curriculum to learning of architecture creates operational and relevance problems for its graduates and society. Adapting curricula to local needs is perceived to produce more successful architecture and architects. The most important revelations from the above discussion can be summarized as follows:

- The dominance of the Eurocentric approach to the learning and teaching of architecture is a prevalent feature of architecture programmes

- Architects in developing countries are perceived to be part of the elite or at least possess knowledge that best serves the elite in society.
- The dominance of the teacher or lecturers in learning of architecture should cease to allow students to develop their own knowledge of architecture.
- It is difficult for architects in developing countries to contribute effectively to local community development because of their training that emphasizes western ideals, which have little scope for local social needs.
- There is a need to emphasize African uniqueness to the global context.
- Social architecture with concern for the public and community welfare needs to be embraced by schools of architecture.
- There is a need for controversial curricula in architecture than the safer non-controversial conservative curricula.
- Curriculum models evolve out of specific relations in society that are appropriate and make them readily applicable to their societies of origin.
- Architecture schools tend to focus on producing graduates for practice rather than engage in intellectual understanding of relations between architects and other professions in the built environment
- Architecture programmes equip graduates with skills for solving task-oriented problems but not intellectual skills, which are necessary in an increasingly complex world. Architectural education should equip students which for them to integrate problem solving with other fields.
- The learning process should help learners to develop an enquiring and critical mind, sense of good judgment and the capacity to act in a rational manner.
- there is a common core of knowledge in architecture which is the same for all cultures.
- the common core of knowledge shared by all students must be shaped by the needs and circumstances of the African context.

- It is desired that the modern graduate be a potential job-creators than job seekers and the skills to ensure this attitude, though important, are not enshrined in the learning system.
- There is shift towards making higher education development based
- Linear curriculum structures do place limitations in the learning experience for architecture programmes. Cyclical approaches to curriculum are proposed to allow the development of sustainable architecture programmes.
- Integration of academic and studio work for architecture programmes is problematic.
- Student overload and time conflicts are a common feature of most architecture programmes and this prevents all those involved in architecture from thinking critically about how architecture education and practice can evolve.

3.11. PERCEPTIONS OF PRACTICING ARCHITECTS: EDUCATION AND PRACTICE.

OVERVIEW OF SECTION

The views of contemporary practicing architects regarding architecture education and curriculum were solicited through a questionnaire sent to members of the South African Institute of Architects (SAIA) who are registered under the Architectural Professions Act Number 44 of 2000. The questionnaire used in this study was developed from several sources and Appendix A shows its' format. The first source of the information came from similar studies undertaken by in 1995 by Symes, Eley, and Seidel that investigated changes in architectural education and practice in the UK. The second source of information for questions was adapted from a study of post secondary colleges in the USA by Wlodkowski and Ginsberg (1995). Their study of diversity and motivation and development of culturally responsive teaching provided the framework for analyzing the theoretical aspects of education. Further Davis' (1993:37) views on the writing of multiculturalism in the architecture programs also informed the formulation of questions. McLean's (1982) study of the specific gap between contemporary architectural education and practice also contributed to

questions. Lastly Gross (1994), Betsky (1997), Mays (1997) and Novitsk (1997) views' on the development of computers and their use in schools and practice were used to formulate questions about the impact of computers in practice and school of architecture.

3.12. SAMPLE OF ARCHITECTS.

The sample of architects was taken from the list of members of the South African Institute of Architecture registered to practice in Gauteng Province in 2001. There were a total of 770 registered architects. The sample was randomly picked, by leaving out every third architect from the list. The two would be picked and questionnaire sent out to them. At total of 279 questionnaires were mailed to architects in Gauteng and follow up was made by e-mail for those that had e-mail address. Only 71 replies were received which the statistician indicated was a reasonable response rate of thirty-three percent (33%) and is within the normal limits of response rate for questionnaire survey. The data were subjected to two tests: the Chi-Square test and Kruskal- Wallis tests to establish levels of significance.

3.13. RESPONSE DATA FOR ARCHITECTS

The data collected from the questionnaires answered by practitioners were grouped in to four general categories. These categories included:

- assessment of current content of architecture schools;
- the experience of architects as students, in terms of implicit learning and establishing culture;
- the position of the design studio and its implications for learning in architecture schools;
- the impact of computer technology on practice and its implications for learning.

Appendix F shows the structuring of questions with the items that were being measured.

3.14. ASSESSMENT OF CURRENT CONTENT OF ARCHITECTURE SCHOOLS

To establish the core content areas of the architectural curriculum, which was being taught in architecture schools in South Africa since 1994, the respondents were asked to indicate the courses they had taken. Published reports of previous studies done on the architecture curricula are difficult to find, or may be none existent. It therefore was necessary to find out the nature content of architectural curricula with a view to describing what constitutes the core knowledge of architectural education in South Africa. The respondents were asked questions on thirty areas of knowledge which are deemed to constitute the core architecture knowledge as developed by Symes et al (1995). The core areas of architecture knowledge are as follows:

- Brief Preparation
- Schematic design
- History of Architecture
- Building Technology
- Construction Drawings
- Structural / Mechanical design
- Specifications and Codes
- Urban Design/Planning
- Computer-Aided Design
- Computerization
- Written Communication
- Graphic Communication
- Oral Communication/Presentation
- Client relations
- Office Management
- Budget Management
- Marketing
- Sociology and Human Behaviour
- Accounting
- Management

- Project Management
- Facility Management
- Interior Design
- Real Estate Development
- Housing
- Landscape Design
- Production
- Research
- Multi-Cultural awareness
- Environmental awareness

The respondents were asked to indicate the adequacy of their preparation in the above areas of study by their architecture schools. By analyzing the subjects that received the most or least level of adequacy, an overall picture of the core content that schools of architecture in South Africa emphasised can be formed. These were then compared with similar studies of UK architects done by Symes et al (1995) and Chinese architects' studies done by Xue and Chen (2003).

3.15. THE EXPERIENCE OF ARCHITECTS AS LEARNERS, IN TERMS OF IMPLICIT LEARNING AND ESTABLISHING CULTURE

The questionnaire was aimed at gauging the architects' learning experience at their school of architecture and, after going through such a learning process, what their cultural beliefs were about various aspects of education at their former architecture school. This data would be used to find out what architects thought was the kind of education they underwent at their architecture school and how it relates to the way they perceive the architectural profession and their role in the wider contemporary society.

Wlodkowski and Ginsberg (1995) suggest that there are four identifiable features of any learning process that can be used to find out whether democratic ideals were realized by its learners in order to establish and maintain culturally responsive teaching, in this case, in schools of architecture. The questions addressed the following:

- **Establish Inclusion**-What can be done to make people feel respected and connected to one another?
- **Developing Attitude**- How can relevance and choice be used to create a favourable disposition toward learning?
- **Enhancing Meaning**-What are active ways to increase the complexity of what we are learning so that it matters to all and contributes to a pluralistic democracy?
- **Engendering Competence**-How can an understanding that people are becoming effective in learning be created?

Sets of questions in the questionnaire were posed to respondents in order to determine their experience of educational norms relating to democratic ideals and cultural response in architecture schools. In almost all architecture schools the position and structuring of the design studio determines the learning culture in schools. Architectural studies are unique with the dominance to the design studio and its' seemingly unorthodox approach at the core of issues. Practicing architects were asked their view about studio method of learning architecture to test its relevance in relation to an ever-changing working environment and society.

Respondents were asked what they thought about computers and information technology and its' impact on the architectural profession. Architects' views about how architects thought computer technology, a relatively new drawing and communication tool, would influence teaching and practicing of architecture were also examined. The questionnaire also asked about the adequacy of computer training provided by schools to its students.

3.16. SUMMARY OF THE RESULTS

Curriculum content describes the basic knowledge that traditionally a graduate of architecture must possess before being eligible for writing the professional examinations. In terms of outcomes it is the minimum level of competence expected of a graduate of architecture.

In the study a wide range to topics from various schools around the world were compiled to test whether architectural schools in South Africa were at par with other contemporary schools of architecture in the delivery of architecture knowledge. The

respondents were asked to comment on the 30 aspects of architecture education on a scale of four variables:

- No training
- Poor
- Adequate
- Excellent

3.17. MAINSTREAM ARCHITECTURE KNOWLEDGE

Fifteen core architectural knowledge areas have been identified, from studying various curricula in South Africa and accreditation guidelines. In general the response in this survey, to the core architectural courses or knowledge areas listed in Table 3.17-1 by most respondents, showed that they had received adequate learning. This can be taken to mean that the schools of architecture generally performed well in delivering the mainstream architectural knowledge to its students. The percentage responses regarding the core areas of architectural education are shown in Table 3.17-1 below.

Table 3.17-1 Mainstream Architectural Knowledge

Subject / course	No training	Poor	Adequate	Excellent	Missing responses
Schematic Design (v10)	-	8.6 (6)	32.9 (23)	58.6 (41)	-
History of Architecture (v11)	-	2.8 (2)	29.6 (21)	67.6 (48)	-
Building Technology (v12)	-	18.3 (13)	42.3 (30)	39.4 (28)	-
Construction Drawings (v13)	1.4 (1)	18.31 (13)	42.3 (30)	38.03 (27)	-
Structural/Mechanical Drawings (v14)	2.8 (2)	25.4 (18)	56.3 (40)	15.5 (11)	-
Specifications (v 15)	8.8 (6)	27.9 (19)	47 (32)	16.2 (11)	3
Urban Design (v16)	4.4 (3)	24.6 (17)	43.5 (30)	27.5 (19)	2
Computer Aided Design (v17)	71 (50)	24.6 (17)	2.9 (2)	1.5 (1)	2
Computerization (v18)	72.5(50)	17.4 (12)	10.4 (7)	-	2
Written Communication (v19)	30 (21)	22.9 (16)	30 (19)	17.1 (12)	1

Graphic Communication (v20)	1.4 (1)	12.9 (9)	48.6 (34)	37.1 (26)	1
Oral Communication and/ Presentation (v21)	14.3 (10)	11.4 (8)	44.3 (31)	30 (21)	1
Production (v35)	37.3 (25)	19.4 (13)	35.8 (24)	7.5 (5)	4
Research (v36)	21.4 (15)	10 (7)	42.9 (30)	25.7 (18)	1
Brief Preparation (v9)	19.7(14)	19.7 (14)	49.3 (35)	11.3 (8)	-

It can be seen from Table 3.17-1 that in Schematic Design and History of Architecture the majority of respondents indicated that they have either adequate or excellent learning experience, suggesting that these are the strongest aspects architecture education that most school of architecture focus their effort. Similar studies in the UK support the findings in this study. Eighty-five (85) percent of the UK architects reported that they had had adequate Schematic Design learning, while eighty – seven decimal three (87. 3) percent indicated that they had received adequate learning in History of Architecture (Symes et al.1995: 44). Over ninety-one (91) percent of the South African architects indicated that they had received adequate to excellent learning in Schematic Design and while eighty –seven (87) percent indicated that they had adequate to excellent learning in History of Architecture. In the Chinese mainland study History of Architecture appears to have more emphasis with ninety-six decimal one (96.1) percent of the respondents agreeing that they had had adequate learning in History (Xue and Chen. 2003:299). However only sixty-one (61) percent of the Chinese respondents indicated that they had received adequate learning in Schematic Design. In this sense it would seem that more emphasis is placed on Schematic Design in South African and UK schools of architecture, than in Mainland China schools.

Thirty-nine decimal four (39.4) percent of respondents indicated that they received excellent education in Building Technology, while over forty (40) percent said the Building Technology education they received was adequate. Thirty seven decimal one (37.1) percent of respondents said they had excellent learning in Graphic Design while forty –eight decimal six (48.6) percent said the learning they received was adequate. Thirty-eight (38) percent of the respondents indicated that they had had excellent learning in Construction Drawings while over 42 percent indicated that they had had adequate learning in this course. In the Oral Communication and Presentation course over seventy percent of the respondents indicated that they had adequate to excellent learning. 31 percent of the British respondents indicate that

they had adequate learning in Communication while only 12 percent of the Chinese respondents agreed to have received adequate learning in Communication skills. Close to seventy percent (68 percent) of the South African respondents felt that they had had adequate to excellent learning in Research while 41.4 percent of the British respondents and 61 percent of the Chinese respondents indicated the same. About sixty (60) percent of the respondents indicated that they had had, adequate to excellent learning in Brief Preparation. More than Fifty (50) percent of the respondents indicated that they had adequate to excellent education in Structural/Mechanical Drawings while seventy-four decimal nine (74.9) and fifty-six decimal five (56.5) percent of the British and Chinese architects indicated the same. In Specification, sixty-three (63) percent of South African respondents indicate that had adequate learning while slightly more than half, fifty decimal nine (50.9) percent of the British and thirty-eight (38) percent of the Chinese respondents said the same. Seventy-one (71) percent of South African respondents indicated that they had had adequate to excellent learning in Urban Design while ninety decimal six (90.6) percent of the Chinese architects and fifty-eight decimal eight (58.8) percent of British respondents said the same. This results shows that there is more emphasis in Chinese schools on urban design because of the demand for city and town planning services in a rapidly urbanizing China market. Training in urban planning adds Xue and Chen (2003:300) “ can raise architects’ macro capability and can counter short-sighted focus on single-building design”.

From above discussion it can be concluded that learners received adequate tuition in the core aspects of architectural education given that in most courses the statistics are not overwhelmingly at variance with experiences of fellow architects in either the UK or China. Where significant differences occur this can be attributed to the peculiarities of the local context. It can be thus concluded that the above courses, which constitute the core modules of architectural education, have received the required emphasis in curricula of South African schools of architecture.

Of all the core aspects of architectural knowledge only Written Communication seems to have been a problem as the more than 50 per cent of the respondents stated that they had either poor or no training at all in the subject. Over 70 per cent of respondents had no training in CAD and Computerization.

3.18. BUSINESS KNOWLEDGE

When asked about knowledge that is related to the business aspects of architecture, most respondents stated that they had had poor or no training in some of the

subjects related to the business aspects architectural practice. In this study six courses were identified from various sources- Lawrence (2000), Cuff (1991), Gutman (1988) and Derrington (1981) - to constitute the business aspects of architecture education. From the perceptions of the respondents it was deduced that the curricula for architectural education for the most part, does not cover extensively the business aspects of the profession. It is difficult to imagine architects selling their new ideas if over 64 per cent have had no training in marketing skills. When compared to other countries only eight decimal five (8.5) percent of the UK principal architects indicated that they had adequate marketing training (Symes et al.1995: 44). Even lower at four decimal nine (4.9) percent of the Chinese respondents agreed that they had adequate training in marketing (Xue and Chen. 2003:299). Like their UK counterparts, only eight decimal five (8.5) percent of the South African respondents indicate that they had adequate to excellent learning in marketing. Table 3-18-1 shows the responses of South African architects to the business aspects of knowledge in architecture education.

Employers expect graduates of architecture to understand the business environment in which they are employed (LHA Management Consultants. 2001:6). Possession of the right qualification is no longer regarded as the sole job criteria for prospective employers. They demand that graduates must be 'agents of change" who will not only utilize their academic expertise, but also their non-technical abilities in creation of job opportunities. Further, new projects require new methods project of delivery, which place importance on the financial, scheduling and competitive aspects of the market. Architects who continue with the traditional methods of practice struggle to make it in such a challenging market. Therefore employing architecture firms are more likely to seek new graduate architects who are schooled in the new issues affecting the architectural market to ensure their survival.

Gutman (1988:72) states that, with a shrinking market for architectural services, it is not uncommon to find marketing specialists some of whom may be architects themselves, being employed in architecture firms to specifically market their firm to its' targeted market in order to ensure survival. This opens up a relatively new function for architects themselves in a field that requires less design skills than in their traditional roles.

Forty-nine (49) percent cent of the architects said they had no management training at their architecture school. Lawrence (2000) suggests that techniques of strategic management are necessary to ensure architectural firms' survival and

competitiveness in a changing market. He sees the schools of architecture, as the best location to train architects in strategic management because of the current highly competitive environment in the architectural profession. Contemporary architectural practice not only allows less time for firms to be willing facilitators for transition of intern architects to professional practice, but it is also an expensive process for them (Lawrence, 2000:202). This leaves schools as the best location of students to learn the business aspects of architecture.

About seventy-four (74) per cent architects said they had either poor or no training at all in Office Management. If architects are to create work and jobs they have to have an understanding of the functioning of firms. The numerous demands of the office, finances, project and people administration are just as important as the production of a good design. Yet schools of architecture seem to have left this to be taught as part of the internship program of architects.

Table 3.18-1 Business Knowledge.

Subject / course	No training	Poor	Adequate	Excellent	Missing responses
Client relations (v22)	44.3 (31)	32.8 (23)	18.6 (13)	4.3 (3)	1
Office Management (v23)	36.2 (25)	36.2 (25)	24.6 (17)	2.9 (2)	2
Budget Management (v24)	53.6 (37)	34.9 (24)	7.3 (5)	4.4 (3)	1
Marketing (v25)	64.3 (45)	27.1 (19)	7.1 (5)	1.4 (1)	1
Accounting (v27)	78.3 (54)	18.8 (13)	1.6 (1)	1.6 (1)	1
Management (v28)	48.6 (34)	34.3 (24)	12.9 (9)	4.3 (3)	1

3.19. CLIENT RELATIONS

Table 3.18-1 shows that forty-four per cent of the responding architects had no training in client relations. Yet, as Gutman (1988:50) argues, it is acknowledge that the client–architect relationship has long shifted from the traditional single patron–architect to one where faceless business organizations are the clients. These organizations have a rational approach to architecture that is seen mostly from profit returns made on an investment. Architects have to be equipped with knowledge in order to negotiate with organizations and maintain control over the design aspects of the environment.

Fifty-four (54) per cent of architects had no budget management training while another thirty-five (35) per cent had poor training. According to Lawrence (2000),

post-modern markets stress disciplined financial and scheduling commitments over design quality. Thus practitioners, who are mostly trained to value design quality, have to realign their practice in order to survive. They will be seeking to get graduates who, not only can design but who also who understand contemporary budgetary constraints.

3.20. ACCOUNTING

Table 3.18-1 shows that seventy-eight (78) per cent of architects had no training in accounting. Eighteen (18) per cent had poor training in accounting. On the whole it seems that accounting issues are not given the required curricula emphasis by most schools of architecture in South Africa.

This may suggest that schools seem to subscribe to the notion that to be successful one simply needs to be a good designer. This view is challenged by many who include, Ken Yang, the Singaporean architect who after gradating from architecture schools went to the study business and financial issues (Public lecture at Wits University 1999). Gutman (1988: 80) postulates that, architects are beginning to realize that there is a probable connection between styles of practice and profitability then, it becomes crucial that issues of economics and finance must be introduced to students of architectures early on to dispel the popular belief that to be successful all that an architect needs is to be a good designer. The merits, Gutman argues, of introducing such subjects as economics and finance and accounting in architectural education is to produce, not only excellent designers, but well rounded practitioners who will be able to survive fragmentation of the profession as dictated by economic demands and tackle low profitability of firms.

This view is supported by almost sixty-three (63) per cent of the architects who state, in Table3.20-1 below, that the schools of architecture they attended did not do a good job preparing them for the realities of business and practice.

Table 3.20-1 Preparation for realities of business and practice

Statement	disagree	Don't know	Agree	Missing responses
The schools I attended did a good job preparing me for the realities of business and practice (v39)	62.9 (44)	10 (7)	27.1 (18)	1
The architecture schools I attended did a good job providing me with a well rounded liberal education (v40)	17.1 (12)	-	82.9 (58)	1

It is evident from the survey that these business oriented courses receive less emphasis in architecture schools and as Symes et al (1995:47) notes, the haphazard manner in which learning these “auxiliary” knowledge is expected to be gained during the traditional year-out continues the weak coverage of such vital knowledge for the profession.

3.21. COMPETING PROFESSIONS

In this study six areas of architectural knowledge were identified in which architects face competition from other professions but in which they could have greater involvement. Table 3.21-1 lists the six areas of knowledge. Many writers, Cuff 1991 Gutman (1988), Derrington (1981), have commented on the competition architects face for jobs from these related professions.

As seen from Table 3.21-1 sixty-two decimal nine (62.9) per cent of architects did not receive any training in Facility Management. Only seventeen decimal one (17.1) percent of the South African architects agreed that they had adequate learning. Similarly only ten decimal three (10.3) percent of the UK respondents agreed that they had adequate training in Facility Management and the Chinese respondents had more than the others with twenty-six decimal nine (26.9) percent agreeing that they adequate training in Facility Management. Seventy- seven (77) per cent of the South African architects had not had any Real Estate training. Similarly seventy-three decimal seven (73.7) percent of the Chinese architects indicated that they had no Real Estate training while only eleven decimal nine (11.9) percent of the British principle architects agree that they had adequate training. These courses do not offer any design challenge to architects but they could be seen as areas in which architects could broaden their knowledge and increase their participation in practice. Over sixty-four (64) per cent of architects had poor or no Project Management training. Only twenty-eight (28) percent the Chinese architects and twenty-one (21) percent of the British architects indicated that they had adequate training in Project Management. Project Management has emerged as a profession, though its' functions were traditionally ascribed to the architecture profession- the functions of management and supervision before and after, during and following construction (Gutman. 1988:67). With architecture schools still not emphasizing these courses, the widening of the architects share of the job market in the built environment remains according to Gutman, unachievable.

More than fifty (50) per cent of the architects either had no training or poor training in interior design. Only fifty-one (51) percent of UK architects had adequate learning in Interior Design while their Chinese counterparts surpassed all the other two groups with over sixty-seven (67) percent of the respondents agreeing that they had had adequate learning in interior design. Chinese schools emphasize interior design in their curricula.

While the UK and Chinese architects did not show the responses to Landscape Design, sixty-three (63) per cent of the South African architects had either poor or no training at all. These are courses that offer design challenge to the architectural profession.

Over seventy-seven (77) per cent of architects indicated that they either had adequate or excellent training in housing. But increasingly architects face competition from other professions from planning and social sciences in provision of housing services.

Table 3.21-1 COMPETING PROFESSIONS

Subject / course		No training	Poor	Adequate	Excellent	Missing responses
Project Management (v29)	Management	36.2 (25)	36.2 (25)	23.2 (16)	4.4 (3)	2
Facility Management (v30)	Management	62.9 (44)	20 (14)	17.1(12)	-	1
Interior Design (v31)		31.4 (22)	25.7 (18)	34.3 (24)	8.6 (6)	1
Real Estate (v32)		77.1 (54)	11.4 (8)	7.1(5)	4.3 (3)	1
Housing (v33)		11.4 (8)	10 (7)	51.4 (36)	27.1 (19)	1
Landscape Design (v34)		31.9 (22)	31.8 (22)	27.5 (19)	8.7(6)	2

3.22. RESPONSE OF SCHOOLS TO DEMOCRATIC CHANGES

To establish whether architecture schools made democratic ideals a priority the respondents were asked a series of questions about how they perceived issues of democracy and what their experience in school were. Wlodkowski and Ginsberg (1995:27) theories on multicultural education were used derive the pertinent questions.

Initially the perceptions of the respondents regarding their cultural and multicultural context are discussed as shown in Table 3.22-1.

Cultural importance is underlined by responding architects' view that students should know their cultural context before they studied architecture as indicated by over 58 (fifty-eight) per cent of architects. Despite this, only fifty-three (53) percent report that

their architectural education helped them understand the multicultural context in which they existed. Understanding of multicultural context in a multiracial society like South Africa, should be a priority in curricula of schools of architect so as not to allow the domination of Eurocentric culture over numerous other cultures within the same society (Uduku, 1995:23, Dutton, 1991:149, Stamps, 1994). Students should be made to feel that their cultural history contributes to the creation of a new and unique urban South African culture. The architectural education through dynamic curricula must endeavour to produce students with a high level of social awareness and knowledgeable in the diversity of experience of other South African cultures, so that students are better able to participate creatively in the changing profession and society.

Although most architects eighty-five (85) percent are of the opinion that contemporary architectural practice has to respond to the complex urban and global issues by recognizing contributions of other cultures to the built environment, fifty-seven (57) percent of architects rarely recognise the multicultural aspects of the South African society. This view is supported by Dutton (1991:85) who argues that, the multicultural aspects of the society are still not recognised in architecture- both in education and practice. Over eighty (80) per cent of architects report that they should acquire new knowledge to help deal with the problems of a diverse society of South Africa. This new knowledge will largely be the fusion of other cultures with the dominant cultures. Crysler (1995:213) describes this as the principle of "co-implication" that recognizes the common history of the formerly oppressed and the oppressors, under -privileged and privileged: black and white peoples: women and men: first world and third world.

Table 3.22-1 Cultural and Multicultural Context

Statement	Disagree	Don't know	Agree	Missing responses
Students should understand the cultural context in which they exist before they learn architectural design. (v 63)	34.8 (24)	5.8 (4)	58.4 (41)	2
My architectural education helped me understand the multicultural context in which I existed. (v64)	41.2 (28)	5.8 (4)	53 (36)	3
Architects should acquire new knowledge to help deal with the problems of a diverse society of South Africa. (v100)	11.4(2)	5.7 (4)	82.9(58)	1

Architectural practice must respond to the complex urban and global issues by acknowledging contributions of other cultures and perspectives.(v108)	2.9 (2)	11.6 (8)	85.5 (59)	2
Most practicing architects seldom recognize the multicultural aspects of society. (v101)	22.9 (16)	20 (14)	57.1(38)	1

3.23. POLITICAL CONTEXT

Fifty-six (56%) percent of architects felt there was little need for students of architecture to understand their political context in which they existed as shown in Table 3.23-1 below. Further forty-nine decimal six (49.6%) percent of practicing architects did not think that their architectural education enabled them to understand their political context. About thirty (30%) per cent of architects agreed that practicing architects had disassociated themselves from political issues of South Africa while over forty-five decimal six percent (45.6 %) did not think architects had done so. Still, more than twenty-three percent (23%) did not have an idea whether architects had disassociated themselves from political issues abound in South Africa. The above statistics seem to follow in tradition that Gutman (1996:88) states that architects' advice on political issues, is not sought by politicians, even in those that they have interest and expertise. One recent example in South Africa exemplifies this. The hiring of Cuban architects by the South African government to help in he housing programmes to which notion many practicing architects disagreed with. The Ministry of Housing went ahead to hire the Cuban architects without consulting the local practicing architects. Dietsch (1997:11)acknowledges that the architectural profession's political indifference is detrimental for its professional standing in society. Further she adds that there is a need to appreciate that government shapes the practice of architecture.

Table 3.23-1 Political Context

Statement	Disagree	Don't know	Agree	Missing responses
Students should understand the political context in which they exist before they learn architectural design. (v65)	56.5 (39)	5.8 (4)	37.7 (26)	2
My architectural education helped me understand the political context in which I existed. (v66)	49.3 (34)	2.9 (2)	47.8 (33)	2

Practicing architects disassociate themselves from the political issues of South Africa. (v106)	45.6 (31)	23.5 (16)	30.9	3
---	-----------	-----------	------	---

3.24. MOTIVATIONAL FRAMEWORK FOR CULTURALLY RESPONSIVE TEACHING.

The section below discusses four criteria of the framework with regards to architecture schools in South Africa. Each of the four criteria has a series of questions that were developed to test whether the practices within the architecture educational environment engender the development of a culturally responsive model in a culturally diverse society (Wlodkowski and Ginsberg. 1995). The criteria refer to the experience of individuals in schools of architecture. Practicing architects were asked these questions in order to assess to response of architecture schools to the new democratic South Africa.

3.24.1 Establishing Inclusion in Architecture schools

Establishing Inclusion as discuss earlier, refers to the norms, procedures, and structures that are woven together to form a learning context in which all students and teachers feels connected to one another (Wlodkowski and Ginsberg. 1995:27).

Sixty decimal three percent (60.3%) of the architects as shown in Table 3.24-1, said that the course work in the school of architecture they attended emphasized the human purpose of what was taught and this was also contextualized their personal experiences.

Only fifty percent (50%) of architects felt that their needs and interests were invited, listened to and acted upon by their lecturers. Just over fifty-two percent (52%) architects thought that collaboration and co-operation were emphasized as a way of learning while almost sixty percent (60%) thought that competition among students was encouraged than co-operation.

Forty percent (40%) of the architects did not know if the course perspectives in their architecture programme assumed a non-blameful and realistically hopeful view of people and their capacity to change.

Slightly more than half, fifty-five percent (55%) of architects believed that there was equitable treatment of students in the school of architecture they attended. Even less architects, at forty-two decimal eight percent (42.8%), believed that their school of

architecture afforded them a chance to point out discriminatory behaviour, practices and policies.

The analysis of responses to the various questions regarding establishing inclusion in architecture schools indicate that there was partial or half success in achieving norms, procedures, and structures that, when woven together form a learning context in which all students and teachers feels connected to one another.

Table 3.24-1 Establishing Inclusion

Statement	Disagree	Don't know	Agree	Missing responses
The coursework in my school of architecture emphasized the human purpose of what was being learned and its relationship to my personal experiences. (v68)	20.6 (14)	19.1 (13)	60.3 (41)	3
My lecturers invited, listened and acted on my interest, feelings, thoughts and needs. (v69)	39.4 (28)	9.9 (7)	50.6 (36)	-
In my architecture school collaboration and co-operation were emphasized as way of proceeding and learning.(v70)	38 (27)	9.9(7)	52.1 (37)	-
In my architecture school competition among students was encouraged more than co-operation. (v71)	40.9 (29)	14.1 (10)	59 (42)	-
My course perspectives assumed a non-blameful and realistically hopeful view of people and their capacity to change. (v72)	20.3 (14)	40.6 (28)	39.1 (27)	2
There was an equitable treatment of all students in my school of architecture. (v73)	32.9 (23)	11.4 (8)	55.7 (39)	1
In my school of architecture I was afforded a chance to point out behaviors, practices and policies that discriminate. (v74)	38.6 (27)	18.6 (13)	42.8 (30)	1

3.24.2 Developing Attitude

Developing Attitude refers to the norms, procedures, and structures that create through relevance and choice, a favourable disposition among learners and teachers towards the learning experience or learning goal.

The results in Table 3.24-2 show that only about fifty percent (50%) of architects thought that their ways of thinking and knowing were contextualized in their own experience. Fifty-two percent (52%) of the architects said thought their programmes allowed them to learn in their preferred manner of learning.

Fifty-five decimal seven percent (55.7%) of architects felt that the process of learning enabled them to make real choices based on their experience, values, needs and strengths. Seventy-seven decimal five percent (77.5%) of architects believed that their former architecture schools afforded them a chance to develop a wide range of skills.

It would seem that there was favourable a disposition to the learning experience for more than half the architects.

Table 3.24-2: Developing Attitude

Statement	Disagree	Don't know	Agree	Missing responses
In my school of architecture, the ways of thinking and knowing were contextualized in my own experience. (v75)	25 (17)	25 (17)	50 (34)	3
The architectural program at my school allowed me to learn in my preferred manner of learning. (v76)	29 (20)	18.8 (13)	52.2 (36)	2
The entire process of learning, from content to accomplishments and assessments encouraged me as a student to make real choices based on my experiences, values, needs and strengths. (v77)	28.6 (20)	15.7 (11)	55.7 (39)	1
My architectural programme gave me a chance to exercise and develop a wide range of skills. (v78)	18.3 (13)	4.2 (3)	77.5	-

3.24.3 Enhancing Meaning

Enhancing Meaning refers to those procedures, and structures that expand, refine, or increase the complexity of what is learned in a way that matters to students, and includes their values and purposes, and contributes to critical consciousness.

Almost a third (31.5%) of architects disagreed that they participated in challenging learning experiences that addressed relevant real world issues in an action-oriented manner. Fifty-four decimal nine percent (54.9%) though did agree with assertion. With regard to expression and language, which can be termed unique to design communication, fifty-nine decimal four percent (59.4%) of architects agreed that they had developed expression and language in their architecture school that enabled them to effectively communicate with their lecturers and fellow students.

Sixty-four decimal two percent (64%) agreed to having developed higher order thinking and critical inquiry that addressed real world issues. It would seem, from the

responses, that architecture schools had performed the function of enhancing meaning reasonably successfully as indicated in Table 3.24-3.

Table 3.24-3 Enhancing Meaning

Statement	Disagree	Don't know	Agree	Missing responses
As a student I participated in challenging learning experiences that addressed relevant, real world issues in an action oriented manner. (v79)	31 (22)	14.1 (10)	54.9 (39)	-
I was able to develop expression and language with my lecturers that enabled the perspectives of all the students to be readily shared and included in the process of learning. (v80)	29 (20)	11.6 (8)	59.4 (41)	2
As a student I was encouraged to develop higher order thinking and critical inquiry that addressed relevant real world issues. (v81)	23.2 (16)	11.6	64.2 (45)	2

3.24.4 Engendering Competence

Engendering Competence refers to those norms, procedures, and structures that create an understanding for students of how they are or can be effective in learning something of personal value.

Forty-nine decimal three percent (49.3%) of the architects felt that assessment in their schools of architecture was connected their frames of reference and values. Slightly more than a third of respondents, at thirty-seven percent (37%) thought that their architecture programs allowed them to attain outcomes at different points in their leaning process.

Table 3.24-4 shows that about fifty-seven percent (57%) of the architects believed that they had acquired multiple ways of representing knowledge in their schools of architecture that they had attended. Self-assessment is an ability that sixty-two percent (62%) of the architects said that they had acquired or developed in their architecture school.

Except for multiple ways of representing knowledge and self-assessment it would appear that other factors of engendering competence were only partially achieved by architecture schools.

Table 3.24-4-Engendering Competence

Statement	Disagree	Don't know	Agree	Missing responses
-----------	----------	------------	-------	-------------------

The assessment process in my school connected to my frames of reference and values. (v82)	31.9 (22)	18.8 (13)	49.3 (34)	2
The program in my school allowed for attainment of outcomes at different points in time. (v83)	34.9 (23)	27.3 (18)	37.8 (25)	5
The programme in my school allowed for multiple ways of representing knowledge and skills.(v84)	32.9 (23)	10 (7)	57.1 (40)	1
The programme in my school allowed me to develop self-assessment as part of the overall assessment process. (v85)	28.6 (20)	8.6 (6)	62.8 (44)	1

3.25. RACIAL AND GENDER ISSUES IN ARCHITECTURE SCHOOLS

3.25.1 Gender Issues

Forty-two decimal seven percent (42.7%) of architects reported that gender issues should not be made a top priority for schools of architecture. Twenty-nine decimal four percent (29.4%) agreed that gender should be a priority with almost an equal number at twenty-eight per cent (28%) not knowing how gender issues should be treated. Table 3.25-1 shows the responses. The lack of a clear standpoint on gender issues may be an indication that schools have already begun to address the issues of gender. If the question of gender is broken into racial grouping then the situation would probably assume another dimension, but this was not covered in this study.

Table 3.25-1 - Racial and Gender issues in architecture schools

Statement	Disagree	Don't know	Agree	Missing responses
Schools of architecture should make gender diversity a top priority in their faculties. (v46)	42.7 (29)	27.9 (19)	29.4 (3)	3
Schools of architecture should make racial diversity a top priority in their faculties. Schools of architecture should make racial diversity a top priority in their faculties. (v47)	38 (26)	22.4 (15)	38.8 (26)	4

Fifteen percent (15%) of architects aged 45 year and younger thought that gender diversity needed to be a priority in architecture school while, forty-one 41 percent of architects aged 46 and above thought gender should be a priority as shown in Table

3.25-2. This may indicate that generally in school of architecture the issue of gender has been addressed hence the younger architects stating that it needn't be made a priority.

Table 3.25-2 Gender Response according to Age

Age	Statement V46	Disagree	Don't Know	Agree
<45	Schools of architecture should make gender diversity a top priority in their faculties.	51.5	33.3	15.2
46+		35.5	22.6	41.9

The same views seem to be held when the question was asked using experience to separate two groups. About fifty-two decimal nine percent (52%) of architects with 20 years experience and less were of the view that gender should not be a priority issue in schools of architecture. Over forty-four percent (44%) of architects with 21 years or more experience thought gender should be made a priority. Indications are that the issue of gender could already have been addressed in more recent time than was much earlier (Table 3.25.3).

Table 3.25-3 Gender Response according to Experience.

Experience	Statement: v 46 v5	Disagree	Don't Know	Agree
<20	Schools of architecture should make gender diversity a top priority in their faculties.	52.9	32.4	14.7
21+		32.4	23.5	44.1

The South African government recognizes issues of women in the construction industry and it has designated all women regardless of race, as PDIs. Breier (2001:4) reports that the South Government White (1997) Paper 3 urges higher education to provide an enabling environment to uproot deep-seated racist and sexist ideologies and practices.

Ahrentzen, and Groat (1992) argues that women in architecture are:

- less likely than their male counterparts to complete their education

- more likely than male graduates to pursue marginal occupation like Interior design, or Landscape design upon graduation.
- They are less likely to pass the registration examination.

3.25.2 Racial Diversity

Table 3.25-1 above also shows that thirty-eight decimal eight percent (38.8%) of architects report that they would like racial diversity to be a priority in schools of architecture. An almost equal number disagree with this view. It is most likely that the latter are people who believe that it racial diversity is already happening in architecture schools.

The government's stand on this issue is that all other races except white male should be regarded as Previously Disadvantaged Individuals (PDIs) in an effort to redress the imbalances of the apartheid system.

The data shows that democratic changes are not receiving priority in the practice of architecture. There is a perception among practicing architects that the changes are being addressed in schools and they should not be made priority.

3.26. COURSES THAT INSTILL SOCIAL RESPONSIBILITY (PERCENT NUMBER.)

Practicing architects were asked to comment on their learning regarding of two areas of knowledge that are considered to have the most impact on contemporary South African society. These are issues involving multicultural awareness and the concern for the environment. Slightly over fifty (50) per cent of the respondents stated that they had had poor or no training in multicultural issues. Over sixty 60 per cent said they had received adequate environmental awareness training. Rowe (in Saunders 1996:249) suggests that because of the diversified nature of the student population that characterizes contemporary architectural education, broader cultural understanding must comprise part of the curriculum of design learning.

A third (33.3%) of the respondents indicated they had received no training on multicultural awareness in their schools while twenty-three percent (23%) felt they had received poor education on the this subject area. It means about Fifty percent (50%) of the architects had little or no knowledge of how to handle multicultural issues in a country where development is shaped by understanding and representing

the heritage, cultural contributions and issues of diverse groups of people. Contemporary practice in South Africa demands a high level of social awareness and knowledge in the diversity of experience of other South African cultures, so that they are better able to participate creatively in the changing profession and society (Davis.1993: 37).

Table 2.26-1 below shows that only twenty-three percent (23%) of the respondents said that they had received excellent environmental education while thirty-nine percent (39%) said that their learning was adequate. Environmental issues have become increasingly important since 1992 Rio Earth Summit as the world becomes more conscious of energy consumption and protection of the earth, ideals to which architects should be more aware and responsive.

Table 3.26-1 Responses to Multicultural and Environmental Issues.

Subject / course	No training	Poor	Adequate	Excellent	Missing responses
Multi-Cultural Awareness (v37)	33.3 (23)	23.2 (16)	18.9 (13)	24 (17)	2
Environmental awareness (v38)	10 (7)	26 (19)	39 (27)	23 (16)	2

3.27. GLOBAL ISSUES

Over 70 percent of architects agree that architectural practice is becoming a global practice but more than half (fifty-six decimal three percent (56.3%)) did not think their schools of architecture had adequately prepared them for global architectural practice. Despite this, sixty-eight percent (68%) of the respondents thought their schools had enabled them to apply their skill and knowledge to the global context. Table 3.27-1 shows the statistical break down.

Table 3.27-1 Global Issues

Statement	Disagree	Don't know	Agree	Missing responses
My architectural education enabled me to apply knowledge and skills to issues of global context. (v 58)	20.3 (14)	11.6 (8)	68 (47)	2
The architecture programmes in schools adequately prepares students for architectural practice in a global world. (v86)	56.3 (40)	14 (10)	29.6 (21)	-
Architectural practice is becoming a global practice.(v109)	11.5 (7)	18 (11)	70.5 (43)	10

3.28. LOCAL RELEVANCE

Seventy-nine decimal six percent (79.6%) of the respondents felt that they learnt to apply their knowledge and skills to the local context in the schools of architecture. But sixty-eight decimal five percent (68.5%) of the respondents also said they were ill prepared in their education to deal with the problems of the low-income majority as shown in Table 3.28-1 below. This may suggest that architects are more comfortable to engage with practice involving the affluent clients than the low-income groups whose problems that are fraught with financial difficulties.

Table 3.28-1 Local Relevance

Statement	Disagree	Don't know	Agree	Missing responses
My architectural education taught me how to adapt and apply knowledge and skills to issues of my local context. (v49)	13 (9)	7.3 (5)	79.6 (55)	2
Professionals aim to improve society's quality of life but they are ill prepared in their education to deal with the problems of the low-income majority. (v91)	22.8 (16)	8.6 (6)	68.5 (48)	1

3.29. TEAMWORK IN ARCHITECTURAL PRACTICE AND EDUCATION

Eighty-six decimal nine percent (86.9%) of respondents agree that contemporary architecture is an interdisciplinary practice. Seventy-nine decimal seven percent (79.7%) of the respondents indicate that because of the complexity of relations in the design process, teamwork should be emphasised in schools of architecture. However only fifty percent (50%) of respondents agree that their architecture school prepared them well for inter-disciplinary nature of practice. Less than half agreed that their lecturers emphasised the importance of teamwork in the design process. Table 3.29-1 shows the responses to teamwork. While architectural practitioners know the need for teamwork, the survey responses suggests that educational practice appears not to foster the development of teamwork skills in their learners.

Table 3.29-1 Teamwork and Interdisciplinarity.

Statement	Disagree	Don't know	Agree	Missing responses
My school of architecture prepared me well for the interdisciplinary nature of practice. (v52)	42.7 (29)	7.4 (5)	50 (33)	3

Teamwork should be emphasized in architecture schools in recognition of the complexity of relations of those involved in the design process. (v59)	13 (9)	7.3 (5)	79.7 (57)	2
The lecturers in my architecture school emphasized the importance of teamwork in the design process. (v60)	42 (29)	11.6 (8)	46.4	2
Contemporary architecture is an interdisciplinary practice. (v92)	8.7 (6)	4.4 (3)	86.9 (60)	2

3.30. ECONOMIC ENVIRONMENT

Economic issues appear to be little covered in architectural education. While most architects, fifty-six decimal five percent (56.5%) hold the view that students need to know their economic context before they studied architecture, only thirty-four percent (34%) of architects said that their architectural education made them understand their economic context as shown in Table 3.30-1 below.

Eighty decimal nine percent (80.9%) of architects view their profession as reflecting the needs of the markets than society. This is critical as it influences the way the architectural profession is perceived by society as a whole.

Table 3.30-1 Economic Issues

Statement	Disagree	Don't know	Agree	Missing responses
Architecture students should understand the economic context in which they exist before they learn architectural design. (v61)	39.1 (27)	4.4 (3)	56.5 (39)	2
My architectural education helped me understand the economic context in which I existed. (v 62)	56.7 (38)	9 (6)	34.3 (23)	2
The architecture profession in South Africa reflects the needs of the market rather than society. (v103)	8.8 (6)	10.3 (7)	80.9 (55)	3

3.31. OTHER CHANGES IN THE ARCHITECTURE PROFESSION

Eighty-seven percent (87%) of the responding architects are of the opinion that design skill is not a guarantee to getting work from clients as shown in Table 3.31-1 below. Eighty-eight decimal six per cent (88.6%) of architects admit that they face stiff competition for work from other professionals when aspects of delivery of projects on time and within budgets are considered. Ninety-four decimal three percent (94.3%) of respondents agreed that broadening of the architecture core

curriculum knowledge and broader understanding of the built environment was necessary to consolidate the architects' position in the business of the environment. One knowledge area that ninety-five percent (95%) of the responding architects agreed that they should be taught is project management. Sixty-one decimal four percent (61.4%) of architects felt that the theories of architecture they were taught in school were still applicable in their profession. Eighty-eight percent (88%) of architects also agreed that contemporary practice requires them to work as part of a team of professionals working in consultation with each other.

Table 3.31-1 Other Changes in the Architectural Profession

Statement	Disagree	Don't know	Agree	Missing responses
Architects can no longer rely only on their design skill to get work. (v93)	11.4 (8)	1.4(1)	87.2 (61)	1
Much of the theory acquired in my architecture school has been discarded early on in my professional life. (v94)	61.4 (43)	2.9 (2)	35.7 (25)	1
Architects face competition from other professionals regarding delivery of projects on time and within budget. (v95)	10 (7)	1.4 (1)	88.6 (62)	1
Architects should be taught project management skills. (v96)	2.9 (2)	1.4 (1)	95.7 (67)	1
To consolidate their position architects need to broaden the core areas of knowledge and understanding of the built environment. (v97)	4.3 (3)	1.4(1)	94.3	1
Contemporary practice requires that the architect be part of a group of professionals working in consultation with each other. (v99)	10 (7)	1.4 (1)	88.6 (62)	1

3.32. ARCHITECTS' PERCEPTION OF SOUTH AFRICAN PROBLEMS.

Table 3.32-1 below indicates that, seventy-seven decimal one percent (77.1%) of architects do not believe that the problems of the low-income majority are outside their profession. But in the public view, some see the architect as an elite-contributing little to local community development- working for the ideals of rich a clientele, corporate firms as is manifest by their luxurious western buildings and life styles. Twenty-six decimal one percent of (26.1%) the architects believe that architects have disassociated themselves from the economic issues of South Africa. This could mean that for architecture practice, finding economic solutions to society's problems is no longer their concern. This feeling exemplified in a statement by a member of the Gauteng Institute of Architects who said (Bizzell. 2002:112):

... our architects have little involvement in low cost housing schemes. This lack of engagement with such initiatives raises uncomfortable questions about the social responsibility and integrity of the profession." He asks, "How much thrill is there in designing a 35 m² house?" But adds that "architects can play an important role in how these houses relate to each other, and the interconnection of the landscape with the public space.

Perhaps this new role can be broadened to where the architect, can be seen as an enabler of the users' initiative- a view that is considered as not reflecting the real character of architectural practice because there is little opportunity to show creative artistic skills as stated in the quote. To do so architects' training has to include in their curriculum, social and economic subjects (Wakely 1983:45). Wakely says a shift in professional service from one addressing the issues of the elite few, to one that tackles issues of the wider community that defines authentic architecture that reflects the cultural dynamism and social aspirations of a country.

Table 3.32-1 Architects Perception of South African Problems

Statement	Disagree	Don't know	Agree	Missing responses
The problems of low-income majority are outside the architecture profession and disciplinary responsibilities. (v98)	77.1 (54)	8.6 (6)	14.3 (10)	1
Practicing architects disassociate themselves from the economic issues of South Africa. (v105)	50.7 (35)	23.2 (16)	26.1(18)	2
Practicing architects disassociate themselves from the social issues of South Africa. (v107)	55.7 (39)	15.7 (11)	28.5 (20)	1

3.33. DESIGN STUDIO: ASSESSMENT, TIME AND RELATIONSHIP TO OTHER COURSES

Studio

Seventy-five decimal four (75,4%) percent of the architects, as shown in Table 3.36-1 below, disagreed with the suggestion that the studio component of architectural education should be given less emphasis and a reduced loading. Yet fifty-five

decimal nine percent (55.9%) of architects agree that more time should be spent on other subjects, such as technical and business aspects of the profession than the design studio. An examination of the stages of an architectural project in practice, according to Cuff (1988) suggests that writing contracts and specification takes the largest share of a project budget and a practices office time. Design and concept development, which many architects like to work on and which architecture schools spend the larger part of studio time on, takes only a small portion of the architectural process. The practical aspects of business aspects of architecture still continue to be largely underplayed in the architecture curricula (Cuff. 1988:72).

3.34. DESIGN PROJECTS

Sixty-nine decimal one percent (69.1%) of the architects, as shown in Table 3.36-1 below, disagreed with the assertion that their design projects in architecture school were client-specific rather than subject or need -specific criteria that reflect a holistic approach to design. It appears that most architects believed that their studio projects reflected holistic approach to design. Over half of the architects (fifty-two decimal nine percent (52.9%)) believed that architectural education teaches students to value design on drawing boards more than communication with the rest of the world. This disposition is reinforced by the comparatively more time allocated to studio and the importance of the role of the studio instructor, who in many instances also coordinates other subject and assignments. In the main, this attitude constitutes the value system that the graduate architects take to practice upon graduation and is only modified when they come into contact with principle architects in practice whose design ethos may have evolved with practical experience.

3.35. THE CRIT

Almost two-thirds (sixty-five decimal two percent (65.2%)) of the architects believe that the Crit system of evaluating design work in schools of architecture is not abusive and does not undermine teamwork (Table 3.36-1). They see it as an effective system of teaching design that should be retained, despite what others may have said about system. Cuff (1988) cites a deficiency of the Crit system as one that doesn't socialize the architecture students with the problems of the public or client while in school. Others argue that since the Crit only takes about 10- 20 minutes per students for projects that had been going on for at least two weeks, it is unlikely that the Crit achieves its goal in such short discussion sessions with the students.

3.36. STUDIO MASTER'S DOMINANCE

Table 3.36-1 below shows that sixty-nine decimal six percent (69.6%) of the architects did not think that the lecturer- student relationship was characterized by lecturer's dominance. Slightly more than a 25 per cent said the lecturer in the studio dominated them.

Table 3.36-1 Design Studio: Assessment, Time and Relationship to other Courses

Statement	Disagree	Don't know	Agree	Missing responses
The Crit system of evaluating design work in schools of architecture is abusive, undermines teamwork, and should be reconsidered (v41)	65.2 (45)	15.9 (11)	18.8 (13)	2
In my school of architecture interaction between lecturers and students in the studio was characterized by lecturer domination of the students. (v42)	69.6 (48)	4.4 (3)	26(18)	2
More time should be spent on other subjects, such as technical and business aspects of the profession than the design studio. (v43)	33.8 (23)	10.3 (7)	55.9 (38)	3
Architectural education teaches students to value design on drawing boards more than communication with the rest of the world. (v48)	36.8 (25)	10.3 (7)	52.9 (36)	3
Design projects in my architecture school were client-specific rather than subject or need -specific criteria that reflect a holistic approach to design. (v 53)	69.1(2)	7.4(5)	23.5(16)	3
As a student of architecture I was taught to do my own thing- that originality is a prerequisite for good architecture. (v54)	37.7 (26)	4.4 (3)	58 (40)	2
The split between formal lecture courses and the conceptual skills of the studio is responsible for the lack of understanding of design. (v 55)	55.9 (38)	27.9 (19)	16.2 (11)	3
Studio component of architectural training must be given less emphasis and consequently have a reduced loading in the programme. (v 56)	75.8 (50)	7.6 (5)	13.6 (9)	5

3.37. THE TECHNOLOGICAL CHANGES IN HAPPENING IN SOUTH AFRICA AND IN THE GLOBAL SOCIETY ARE CHANGING CURRICULA AND THE WAY ARCHITECTURE IS BEING TAUGHT IN SCHOOLS.

To assess the impact of technology on learning of architecture the respondents were asked to respond to the various questions on three variables: Agree, Don't and Disagree. The questions were developed from articles by recent authors on the subject of computer and their use in schools of architecture and practice (Gross 1994, Stevens 1997, Vernon 1997, Novitski .1997. Table 3.37-1 below shows the response of the architects to the various questions.

Table 3.37-1 Computer Changes in Architectural Education and Practice.

Statement	Disagree	Don't know	Agree	Missing responses
The computer training I received in my architecture school was adequate. (v111)	70.2 (33)	21.3 (10)	8.5 (4)	24
The reasons why computers were introduced in my practice are because clients, facilities managers and building owners require CAD drawings of our designs. (v112)	50 (32)	6.3 (4)	42.7 (28)	7
The CAD operators in our office are all qualified architects. (v113)	71.4 (45)	6.4 (4)	22.2 (14)	8
Sharing of files with other members of the building team results in fewer errors and better-worked out details. (v114)	16.4 (11)	16.4 (11)	67.2	4
The scope of work for the architect has expanded as a result of using computers.(v115)	34.9 (23)	19.7 (13)	45.4 (30)	5
Keeping track of time taken for a project done using computers, is a difficult process in the practice office.(v116)	56.1 (37)	19.7 (13)	24.2 (16)	5
Because of computers the traditional relationship between the principal architect and the junior, to check the evolution of design, is no longer possible as the screens are normally filled with detail. (v117)	53 (35)	13.6 (9)	33.3 (22)	5
I received adequate Computer Aided Design (CAD) training in my architecture school.(v 118)	85.4 (47)	7.3 (4)	7.3 (4)	16
Architectural firms now only hire new staff familiar with CAD. (v119)	15.2 (10)	15.2 (10)	69.6	5
Computers will change the way design is taught in schools of architecture. (v120)	38.8 (26)	6 (4)	55.2 (37)	4

Table 3.37-1 above shows that seventy-five percent (75%) of the architects reported that they had not received any computer training from their architecture school. More

than eight-five percent (85%) had not had Computer Aided Design (CAD) training from their architecture school. Sixty-seven decimal two percent (67.2%) of the architects believe that sharing of files on computers minimized mistakes and resulted in better-worked out details as found in the American study by Vernon (1997). Only forty-five (45) per cent believed that the scope of work for architects had increased as a result of use of computers. Fifty-six percent (56 %) of the respondents in this study did not believe that keeping track of time for projects in the office is difficult as a result of computers as suggested by Vernon. Some experts say computers have made the creative (drawing) process much quicker and detailing as well has become a quick and easy process. However other professionals lament the loss of “ingestion time.” There exists a fear that architects have little time to think about their decisions on designs and they may have lost the sense of professional judgment for which they are most valued.

Forty-two decimal seven percent (42.7%) of the respondents report that computers were introduced in their practices because clients, facilities managers and building owners require CAD drawings of our designs. This slightly lower than the Fifty-two percent (52%) responses of architecture firms in America who reported that their clients required CAD documents (Vernon.1997: 161). It appears that for South African architects there were other reasons for introducing computers in practicing offices. The views of the more experienced architects are at variance with the convictions of the less experienced architects. Sixty decimal seven percent (60.7) of the architects who have practiced for more than 21 years agreed with the view that the reasons for introducing computers in their practice were because of demand for CAD drawings by clients, facilities manages and building owners. Thirty-four percent (34%) of less experienced architects, with less than 20 years experience, expressed the same view. In fact, sixty-five decimal six percent (65.6%) of respondents with less than 20 years experienced architects disagreed that clients, facilities managers and building owners were the reasons for the introduction of computers in their architectural office (see Table 3.37-2 below). The explanation for such difference of opinion can only be alluded to the notion that the less experienced architects had a greater exposure to computers in their architecture schools than their much more experienced counterparts.

Table 3.37-2 Views on introduction of computers according to experience

Experience	Statement v112	Disagree	Agree
	The reasons why computers were introduced in my practice are because clients, facilities managers and building owners require CAD drawings of our designs.		

<=20	65.6	34.4
21+	39.3	60.7

Sixty-nine decimal six percent (69.6%) architects agree architectural firms only employ people familiar with CAD. Computers as analytical tools for design development have become one of the standard permanent services offered by architects.

Ninety decimal three percent (90.3%) of architects with 20 years or less experience agreed that architectural firms only hire new staff familiar with CAD. A lesser percentage, about seventy-two percent (72%) of architects with more than twenty years experience also expressed similar views. Table 3.37-3 below shows the statistics.

Table 3.37-3 Views on hiring of new staff according to experience

Experience	Statement v119	Disagree	Agree
	Architectural firms now only hire new staff familiar with CAD.		
<=20		9.7	90.3
21+		28	72

This places a demand on schools of architecture to offer to all their students CAD training.

About 33 percent (33%) of the respondents believe that supervision of work in practice is difficult with the use of computers. Vernon (1997:161) argues that the traditional relationship between the principle architect and the junior- of supervision- to check the evolution of the design is no longer possible as the screens are mostly filled with detail. Keeping track of time taken for a project seems not to be a problematic issue. Seventy-eight percent (78%) of architects with 20 years or less experience disagreed that keeping track of project time was a difficult process. Sixty percent (60%) of architects with more than 20 years experience also disagreed (Table 3.37-4). This finding contrast's with Vernon's (1997) conclusion that because computers are new tools in the office, it is hard to find out exactly how much time each machine is used for a given project.

Table 3.37-4 Keeping track of time

Experience	Statement v116	Disagree	Agree
	Keeping track of time taken for a project done using computers, is a difficult process in the practice office.		
<=20		78.6	21.4
21+		60	40

However when it comes to computers introduction in schools, Fifty-five percent (55) of the respondents believe that computers will fundamentally change the way architecture is taught as evidenced by the increased instances of the “paperless studios” (Betsky.1997). Respondents with 20 years or less experience appear to be divided on whether computers will alter the way design is taught in architecture school. Slightly more than half, fifty-four percent (54.6%), agree with statement that design teaching will change because of computers. Sixty-three decimal three percent (63.3%) of architects with more than 21 years experience believe that design teaching will change as a result of computer introduction in architecture schools (Table 3.37-5).

Table 3.37-5 Design teaching and Computers

Experience	Statement v120	Disagree	Agree
	Computers will change the way design is taught in schools of architecture.		
<=20		45.5	54.6
21+		36.7	63.3

One possible new way of learning architecture is through the web-site network. With computer facilities getting more complex it should be possible to offer distant education through the web-site network.

3.38. FINDINGS

The analysis of the survey has revealed the nature of architecture education experience for architects in South Africa. Further the survey has revealed issues that affect the practice of architecture that could be addressed by making changes in the way architects are taught in schools of architecture. Issues raised from the survey can be summarized as follows:

- Schools of architecture in South Africa do perform well in delivery of core architectural knowledge to the graduates.
- Only Written Communication seems to have been a problem of all the core aspects of architectural knowledge
- Architecture schools do not train their graduates in business skills.

- Marketing skills are less adequately taught in architecture schools. This limits their abilities to market their services effectively or create new opportunities
- Architects' training in office management is mostly inadequate.
- Most architects are not well trained in dealing with complex corporate client relations.
- The business aspects of architecture practice are not adequately covered in schools.
- Architects receive very little knowledge of competing professions like project management, interior design landscape etc.
- Schools of architecture were doing a good job of imparting environmental knowledge; they were failing in providing learning of multicultural issues in their curriculum.
- Schools of architecture do not adequately impart knowledge that enhances the understanding of the multicultural context in which they operate.
- Architects rarely recognise the multicultural aspects of the South African society
- Schools of architecture do not foster the learning of the political context in which architects operate.
- Establishing inclusion in architecture schools was partial or half successful.
- The majority of architects believed that their former architecture schools afforded them a favourable disposition to develop a wide range of skills.
- Architecture schools had performed the function of enhancing meaning reasonably successfully
- Self-assessment and multiple ways of representing knowledge were skills that most architects felt they had learnt in architecture school.
- Achieving outcomes at various levels was less successfully achieved.
- Schools of architecture less successfully achieved connecting assessment to personal frames of reference and values.

- More experienced and older architects thought gender issues should be given priority by schools of architecture.
- Architects are unsure about whether racial diversity should be made a priority in schools of architecture. There is a perception among practicing architects that the changes are being addressed in schools but they should not be made priority.
- Most architecture realize the global nature of architectural practice but think architecture schools do adequately prepare them to practice at that scale.
- Most architects perceive themselves to be ill prepared in their education to deal with the problems of the low-income majority.
- Educational practice appears not to foster the development of teamwork skills in their learners
- Architecture programmes do not help learner to understand their economic context
- Architects view their profession as reflecting the needs of the markets than general needs of society.
- Architects admit that they face stiff competition for work from other professionals when aspects of delivery of projects on time and within budgets.
- Architects agreed that broadening of the architecture core knowledge and broader understanding of the built environment was necessary to consolidate the architects' position in the business of the environment
- Architects agreed that they should be taught Project Management
- Architects do not believe that the problems of the low-income majority are outside their profession
- Most architects believed that the scope of work for architects had increased as a result of use of computers

- Architects realize the importance of other courses, but are unwilling to reduce the time spent on design studio in school of architecture.
- Architects value design studio more than other courses even though they do acknowledge the importance of devoting more time on these courses in architecture.
- Architects place high value on the Crit system as a method of learning.
- Architects are of the view that the lecturers in the design studio did not dominate students.
- Architects realize the importance of other courses, but are unwilling to reduce the time spent on design studio in school of architecture.
- Architects value design studio more than other courses even though they do acknowledge the importance of devoting more time on these courses in architecture.
- Architects place high value on the Crit system as a method of learning.
- Architects are of the view that the lecturers in the design studio did not dominate students.
- Older architects are of the view that computers were introduced in practice because of demand for CAD drawings by clients, facilities managers and building owners. Younger architects had mostly used computers because they had started using them in school of architecture.
- Architectural firms only employ people familiar with CAD.
- Architects believe that computers will fundamentally change the way architecture is taught or learnt
- Majority of architects had no training in CAD and Computerization from their schools of architecture.

3.39. CONCLUSION

Contemporary issues influencing architectural practice seem to be only partially affecting teaching and learning. Although the present curriculum in architecture schools provides a reasonably adequate level of traditional architectural knowledge it fails to prepare the graduates for the changes that affect the profession and its future. It has been noted that architecture curriculum needs to respond to the developmental context is characteristic of South African society.

Questions have been raised about the dominance of the design studio in architectural education and its relation to others courses, which are increasing in importance as, demanded by context.

It has also been noted that computer technology has potential to change the way architecture is taught and practiced.

The above discussion of the general context within which architecture is taught and practiced in South Africa, as well as the analysis of the survey of architects supports the proposition that a comprehensive understanding of the society is essential to ensure a built environment the represents all cultural groups.

CHAPTER 4: LEGISLATIVE FRAMEWORK

4.1. SUB- PROBLEM 3

Current educational curricula do not address all the needs of a changing South Africa in terms of architectural practice and education.

Proposition: There is a scale of needs of a changing South Africa from global through to local scales, which are not addressed in the curricula in schools of architecture in South Africa.

4.2. OVERVIEW OF CHAPTER.

The chapter begins with a brief outline of the major legislative framework that the South African government has enacted to guide transformation in architectural education and profession. The second part outlines in more detail the nature of problems that the legislation addresses and using examples from other studies in the country, raises issues that have arisen in the transitional phases of transformation in higher institutions of learning. It discusses the characteristics of programmes that engender transformation of the South African society while at the same time provides graduates with skills to engage with an evolving working environment and the global market. The chapter concludes with an outline of the issues that need to be addressed in the transformation of the architectural profession.

4.3. REVIEW OF LITERATURE: LEGISLATION RELATING TO THE ARCHITECTURAL PROFESSION.

The three prominent legislation that the South African government passed in the post-apartheid era in order to address and monitor change in the architectural profession are as follows:

- No. 43 of 2000: The Council for the Built Environment Act, 2000
- No. 44 of 2000: The Architectural Professions Act, 2000
- No. 58 of 1995: South African Qualifications Authority Act, 1995.

4.3.1 The Council for the Built Environment Act

The Council for the Built Environment has as its' function the promotion of liaison in the built environment in the field of training, both in South Africa and elsewhere, and to promote the standards of such training. The CBE serves as a forum where the representatives of the built environment professions may discuss the relevant issues:

- the required qualifications
- the standards of education
- training and competence
- the promotion of professional status
- the impact of legislation on the built environment
- the uniform application of norms and guidelines set by the councils for the professions throughout the built environment

4.3.2 Architectural Profession Act (SACAP)

The architectural profession Act Number 44 of 2000 sets out the legal basis for the establishment of the South African Council for the Architectural Profession. Its' main task is to facilitate the registration of various categories of professionals within the practice of Architecture as stipulated in section 18 of the Act. The categories are differentiated in accordance with applicants' level of academic qualification.

Further stipulated in section 13 of the Act Number 44, are the powers extended to the council with regard to monitoring of architectural education. The council is mandated to visit any department, school or faculty of architecture at least once in its tenure of office with the purpose of granting or withdrawing accreditation. The ACT does not stipulate the composition of accreditation bodies.

Under the Act, the SACAP is obliged to consult and liaise with the Council on Higher Education; South African Qualification Authority's (SAQA) National Standards Body (NSB); and the Council of the Built Environment (CHE). There is a general statement in sub-section k) to the effect that the Council shall determine after consultation with voluntary associations and registered persons, conditions relating to and the nature and extent of continuing education and training. Further, section 17 states that the Council has the power to appoint committees to assist in the performance of its' functions.

4.3.3 South African Qualifications Authority Act

The SAQA Act Number 58 OF 1995 sets out the legal framework in which higher education transformation will be achieved by using the National Qualification Framework (NQF). It is also the basis for the establishment of the NSB 12 Physical Planning and Construction-Sub field: Physical Planning, Design and Management. The functions of SAQA are as follows:

- to oversee the development of the National Qualifications Framework
- to formulate and publish policies and criteria for:
 - the registration of bodies responsible for establishing education and training standards or qualifications;
 - the accreditation of bodies responsible for monitoring and auditing achievements in terms of such standards or qualifications
 - to oversee the implementation of the National Qualifications Framework, including-
 - the registration or accreditation of bodies and the assignment of functions to them
 - the registration of national standards and qualifications
 - steps to ensure compliance with provisions for accreditation;
 - steps to ensure that standards and registered qualifications are internationally comparable;

The three acts describe the environment in which transformation of the architectural profession and education is going to occur within what the government perceives to be the appropriate and relevant response to the needs of the South African society.

4.4. CHANGE IN SOUTH AFRICA EDUCATION: AN EVOLVING PARADIGM

It has been argued that when the economy of a country is in a crisis many questions are raised regarding that country's ability to compete on the world market and its ability to employ its young people. A country begins its' inward self-examination by testing the educational objectives against the complex contemporary crisis it faces. The present South African society, having achieved democratic independence, finds itself in a situation where, independence can only be sustained by giving its entire people economic independence. In educational terms, this translates into enabling people to acquire knowledge and skills that will make them compete in the global economy unlike in the apartheid era with its' separate education system. As such

there is a belief expressed by the Government that achievement of economic growth means improvement in the quality of education (HSRC, 1995:). New standards for education and training, according to Loggerenberg (2000:10) were in the main generated by the following:

- Counteracting the former system
- Bridging the gap between education and training.
- Preparing South Africans for the 21st Century:

4.4.1 Counteracting the former system

After the demise of apartheid there was an immediate need to abolish the consequences of previous curricula in terms of outcomes, content, curricular structures, access to education, teaching and assessment strategies. The new South Africa was committed to democracy where equal learning opportunities are available. An equitable system of education for all South African is desired which will accommodate those learners from conventional schools, colleges and training programmes as well as the needs of the learners who have not enjoyed formal education and training. Not only does ensuring democracy require new methods of instruction but equally important is the production of "new" knowledge.

4.4.2 Bridging the gap between education and training.

Previous societal perceptions of education and training, lead to a need to abolish the idea that education, which was more academically oriented, was superior to training, which was labour, oriented.

Trade, industry and labour in South Africa have increasingly been dissatisfied with education and training because it was deemed far behind their international counterparts. There is therefore an urgent need to produce graduates who can perform at a global scale.

4.4.3 Preparing South Africans for the 21st Century:

The reality of globalization and changes in work organization must be addressed through new curricula. The South African government has adopted OBE- Outcomes Based Education- as a means to addressing the political, socio-economical and vocational issues stated above (Loggerenberg, 2000:11, Breier 2001). Three types of OBE models that have been identified are as follows: the traditional approach'

transitional approach, and the transformational approach (Pretorius 1998:X). According to Loggerenberg (2000:12) South Africa government chose the transformational OBE model for two reasons:

- Firstly, because it gives a curriculum that is designed around long term outcomes related to future roles of learners,
- Secondly, the transformational OBE model seems the most responsive when rapid social change is desired a society.

The transformational OBE model describes similar objectives to the reconceptualists views in the Reconstructionist educational philosophy. The transformational OBE model sets out critical outcomes that learners will have acquired in terms of knowledge, skills, attitudes and values, once learners have been through the system. The integration of training and education in South Africa will be achieved through the National Qualifications Framework Loggerenberg (2000:13).

Policy and Approach to Curriculum Development in the South African Context. Higher Education Curriculum Development: the International and local Debates

According to Breier (2001:3) numerous South African policy documents on higher education have enshrined within them the concerns listed in Table 4.4.1. These policies bring with them, subtle implications for curriculum discussion and restructuring.

Table 4.4-1 Curriculum Restructuring in higher education in post apartheid South Africa Source Breier. (2001:2)

International concerns In Higher Education	Associated curriculum issues being addressed internationally
Globalization, Massification, Internationalism	What kind of curriculum could prepare students for participation in a global economy? How should curricula accommodate the effects of Massification, primarily the changes in the student population: diverse ethnic, racial, class and language groups and increasing numbers of adult students, students with special needs and students from other countries? In South Africa particularly: how does one ensure equity of outcomes, when most of the new comers to higher education are from educationally deprived backgrounds?)
Responsiveness	To what extent should the curriculum be responsive to the "outside world"- particularly the needs of the economy, but also to the needs of the wider society or a particular community?
Different forms of knowledge	To what extent should the curriculum accommodate knowledge traditionally regarded as non-academic, local, indigenous or other

	previously marginalised forms of knowledge, as opposed to knowledge characterized as international, global, even universal? To what extent and how should curricula adapt to changes in knowledge production in which knowledge production in which knowledge is increasingly being produced in the site of application rather than academy?
Disciplinarity	Should the curriculum promote the traditional disciplines, inter-disciplinarity or Transdisciplinarity? And what do these concepts mean?
Lifelong learning	The new world economy requires adults to retrain several times their working lives. There is also a need for leisure time educational opportunities for an increasingly older population (at least in developing countries). What does a 'Life long learning' curriculum look like?
Graduateness	What skills and forms of knowledge do employers' value? Are these generic or specific skills or discipline-specific skills and knowledge?
Citizenship	What kind of citizen is envisaged and how can curriculum help to develop such citizen? How can it help forge a sense of national identity (particularly in developing countries)
Freedom and Accountability	What should the relationship be between institutional autonomy, academic freedom and public accountability, in an era of increasing responsiveness? How will these relationships affect curricula?
Distance education	What are the implications for curricula of the increasingly popular distance mode of delivery? What does a quality distance curriculum look like? What forms of learning cannot be facilitated in distance mode?

In efforts to systematically achieve educational redress, the National Qualification Framework (NQF) was implemented which placed its own demands on curriculum redesign. Further a programme-based approach to funding has been introduced with a view to addressing South Africa's economic needs. Table below describes some of the more urgent issues that have major implications for curriculum development.

Table 3-4.4 Curriculum Restructuring in higher education in post apartheid South Africa Source Breier. M. 2001:3

South African Concerns in higher Education	Associated curriculum issues being address in South Africa
The National Qualifications Framework	The NQF is dependent on the specifications of qualifications on an outcomes format. What are the consequences for curriculum development and institutional autonomy in higher education?
Programmes Development	The government has advocated a new programme based approach to funding higher education. What is meant by a 'programme' and what are the curriculum implications?

	Does a programme have to be inter-disciplinary and oriented towards graduate employment?
National and institutional Planning and Qualification registration	The development of national and institutional plans for higher education and the bureaucratic imperatives of NQF are draining the meager personal pool. Who has the energy and time for curriculum development?

According to Breier (2001:14), there are implications for higher education curriculum if the life long learning has to be implemented. Five characteristics of undergraduate programs that enhance life long learning of undergraduate are as follows:

- They provide a systematic introduction to the field of study
- They offer a comparative or contextual framework for viewing the field of study
- They seek to broaden the student's knowledge and generic skills
- They offer some freedom of choice and flexibility of structure
- They provide for the incremental development of self-directed learning

Apart from having the above listed characteristics, programs with life long learning objects have to have appropriated teaching methods. Such methods should have following characteristics:

- They make use of peer-assisted and self-directed learning.
- They include experiential and real-world learning.
- They make use of resource-based and problem based learning.
- They encouraged the development of reflective practice and critical self-awareness.
- They make use of open learning and alternative delivery mechanisms.

4.5. GRADUATENESS AND GENERIC SKILLS

Scot (in Breier.2001: 15) describes Graduateness refers to those qualities expected from graduates by employers. The contemporary working environment places demands graduates with capacity to apply their skill to a context that is continuously evolving. Acquisition of generic skills is regarded as an element of education that aims for life long learning that provide the graduate with the ability to function in many

new context as demanded by the economic environment. As Breier (2001: 15) generic skills provides the link between certain aspects of education and the workplace and between formal and informal learning. Generic skills may generally include the following competencies:

- Written
- Oral and interpersonal communication skills
- Problem-solving.

The White Paper on Higher Education in South Africa classifies generic knowledge for graduates as being as follows:

- Critical
- Analytical
- Problem- Solving
- Communication Skills
- The ability to deal with change and diversity
- Tolerance of different views and Ideas

SAQA also demands that every graduate programme should have enshrined in it, the critical cross-field specializations, which are essentially generic skills, which are discussed later in this chapter.

4.6. RECOGNITION OF PRIOR LEARNING (RPL)

The White Paper on Higher Education and National Council for Higher Education (NCHE) has instituted accreditation and assessment of prior learning at the request of the Trade Union Movement and the industrial training sector. Through SAQA regulations all qualifications can be achieved through recognition of prior formal, non-formal, or informal learning (Breier. 2001:17). Breier, further argues that if RPL is not followed by curriculum change, there is a risk of reinforcing standards and forms of knowledge that are celebrated than 'recognizing' and accrediting alternative forms of knowledge. While the intention of RPL is noble to redress the ills of marginalised groups, its implementation is fraught with problems and needs further deliberation and research.

Recognition of prior learning is meant to afford access to higher education to all in society based on a system that is open and flexible. Credits for past learning is acknowledged and entry to programmes is at multiple levels and as are the exit points for learners.

There are many problems with implementing RPL in higher education but it possess an inherent capacity to change conventional knowledge and the opportunity create new, innovative ways of learning.

4.7. CITIZENSHIP

It is argued that society reproduces itself through education. Therefore, the curriculum becomes the important means by which society ensures the character of its' citizenry. Curriculum emphasis generally falls in two categories:

- Cultural, political or moral knowledge
- Skills and knowledge for economic productivity

The White Paper of Higher Education in South Africa defines curriculum requirements that would enable its citizens to perform at both the national and global scale. Potential conflicts do arise as suggested by Breier (2001:18), that the globalization threatens local culture and patterns of life. Perhaps the most important characteristic of a curriculum that addresses global issues is one that is open towards other environments and cultures.

4.8. ACADEMIC FREEDOM VERSUS PUBLIC ACCOUNTABILITY

Academic freedom refers to the right exercised by academics and their institutions to pursue academic work for the sake of production of new knowledge without restraints controlling bodies like governments. The necessity for such freedom stems from the premise that creative thought and intellectual inquiry can only happen, if freedom of thought is guaranteed.

According to Breier (2001:19) public institutions have a duty to inform their governing bodies and the wider society of their performance and decisions. With regard to curriculum, higher education institutions should inform the public of its decision to address some of societies main concern. In the South African context such decision may include the emphasis on teaching of generic skills, problem-based learning and

'critical cross field' outcomes in response to the demands of the employment market or society.

4.9. DISTANCE EDUCATION

Distance education is seen as a way of increasing access to education for the wider population of South Africa. This involves the use of high quality resources. But distance learning has inherent problems, some of which are technical and others educational nature. Sometimes the technical base to support distance learning may not be very successful (Breier: 2001:20). More importantly for a course like architecture, because of its tradition i.e. Studio learning, peer learning, tutor or mentoring, and reflective learning based on one to one relationship between student and lecturer, distance learning is perhaps not conceived as an option in many architectural institutions. Extensive research is required before it can be accepted and introduced. Presently none of the architectural schools in South Africa offers architecture as distance learning programme.

4.10. PROGRAMME DEVELOPMENT

The South African government's policy on higher education aims at a systematic and coherent method of funding and provision of certified qualifications to its citizens. The intention is for government to fund student learning for approved programmes in various institutions (Breier. 2001:27). These programmes are defined as (NCHE. 1996:84-89):

The building blocks of the planning, funding, and quality systems that will underpin the single coordinated system consisting of a coherent, planned and integrated sequence of learning activities, the successful completion of which leads to the award of a formal qualification at certificate, diploma level...

Programmes will invariably be trans-, inter-, or multi-disciplinary and can be transinstitutional as well which would need to be educationally transformative and diverse, planned, coherent, integrated, value-adding, building contextually on learners' existing frames of reference, learner-centred, experiential and outcomes-oriented. Programmes should develop attitudes of critical inquiry and powers of analysis and prepare learners for continued learning in a world of technological and

cultural change. Wherever possible they should emphasize the scholarly exploration of African themes, problems and situations. It was nevertheless vital that the qualifications obtained in South African higher education should be internationally recognized.

4.11. COHERENCE

Coherence in curriculum contents and design can be viewed in two ways: horizontal and vertical coherence. Horizontal coherence refers to organization of subjects around a core theme. An example in architecture would be subjects like construction, theory, ecology; structures are linked together around design studio as the core theme. Further Horizontal coherence may used to define the theoretical (academic) and applied components of a degree. Vertical coherence refers to the hierarchical organization of a degree programme- as in first, second and third year construction in architecture with increasing complexity (Breier. 2001:28).

4.12. GLOBAL CHALLENGE

In answering a question as to what would have to be done to define an African Higher Institution, participants to a UNESCO conference on " Teaching in Higher Education" identified change in curriculum as one of the main issues (Breier.2001: 11). This, they said would allow the development of institutions that adhere to global standards, while focusing of the local needs and context.

In responding to global challenges curricula of architecture needs to take cognisance of contemporary issues that Gibbons (in Breier. 2001:7) terms Mode 2 as a new form of knowledge production. Mode 2 varies from Mode 1, which is the traditional or better defined as the scientific ways of knowledge production as shown in Table 4.12-1 below. By contrast Mode 2 is characterized by:

- Knowledge produced in Context of application
- Transdisciplinarity
- Heterogeneity and Organizational diversity
- Enhanced social accountability
- More broadly based systems of quality control

Table 4.12-1 shows the comparison between Mode 1 and Mode 2 knowledge. (Source: Kraak, A. 2000, HRSC)

The Characteristics OF Mode 1 and Mode 2 Knowledge	
Mode 1 Disciplinary Knowledge	Mode 2 Problem- Solving Knowledge
Disciplinarity Knowledge is formal and coded according to canonical rules and process of academic disciplines	Trans-Disciplinarity Knowledge is problem-oriented; it attempts to solve problems by drawing on multiple disciplines, which interact in the real world contexts of use and application, yielding solutions and new knowledge which are not easily reducible to any of the participating academic disciplines.
Homogeneous production site The development of disciplinary know-ledge has historically been associated with universities and other institutions of higher education. These institutions often exist in (ivory tower) isolation from real world problems.	Heterogeneous, trans-institutional production sites Knowledge is produced in multiple sites by problem-solving teams with members emanating form various institution: from Higher Education Institutions, networking enterprises R &D laboratories, state S & T institutes, NGO think tanks. Formal partnerships and joint ventures forged between these actors to generate new knowledge and exploit its commercial potential are common.
Insular Knowledge The only reference points for disciplinary knowledge are academic peers and the canonical rules and procedures internal to academic discipline.	Socially useful knowledge Many of the problems addressed by trans-institutional knowledge workers today are of great social importance or commercial value. This is socially accountable knowledge.

Some academics like Ravjee (1999) and Jansen (1998) writing in Breier (2001:9) advise that, while Gibbons Mode 2 assertions seem dynamic, they should be critically analyzed before they can be adapted to local curricula of educational institutions.

4.13. PROBLEM-BASED -CURRICULUM.

How should the curriculum be shaped to address issues of the South African context. The participants to the UNESCO conference held at Wits University, in Johannesburg 1991 proposed that a problem-based curriculum organised in an interdisciplinary manner would be ideal. With many interconnected issues such as poverty, urbanization, health crime, conservation, small business and management, its' students could grasp the African context in entirety. Additionally, electives or specializations defining African culture, heritage, history, literature and language, science and technology and information technology literacy should be part of the curriculum to make it more responsive to its context. But others like Breier (2001: 11) express skepticism about Africanisation of curricula and claims that it may have been dominated by the needs of NQF and programme development.

4.14. NATIONAL QUALIFICATIONS FRAMEWORK

The NQF concept and policy evolved from a national consensus of labour movement, management, government and providers of education and training (Pretorius. 1998:23) to be used in the restructuring the South African higher education curricula (Breier. 2001:39). The concept of creating lifelong learners is the main aim of the National Qualifications Framework. By giving learners the opportunity to decide when, where and how they want to study and progress, the framework affords the learners with a variety learning opportunities, which in turn empowers them. National Qualifications Framework aims to (Loggerenberg, 2000:14):

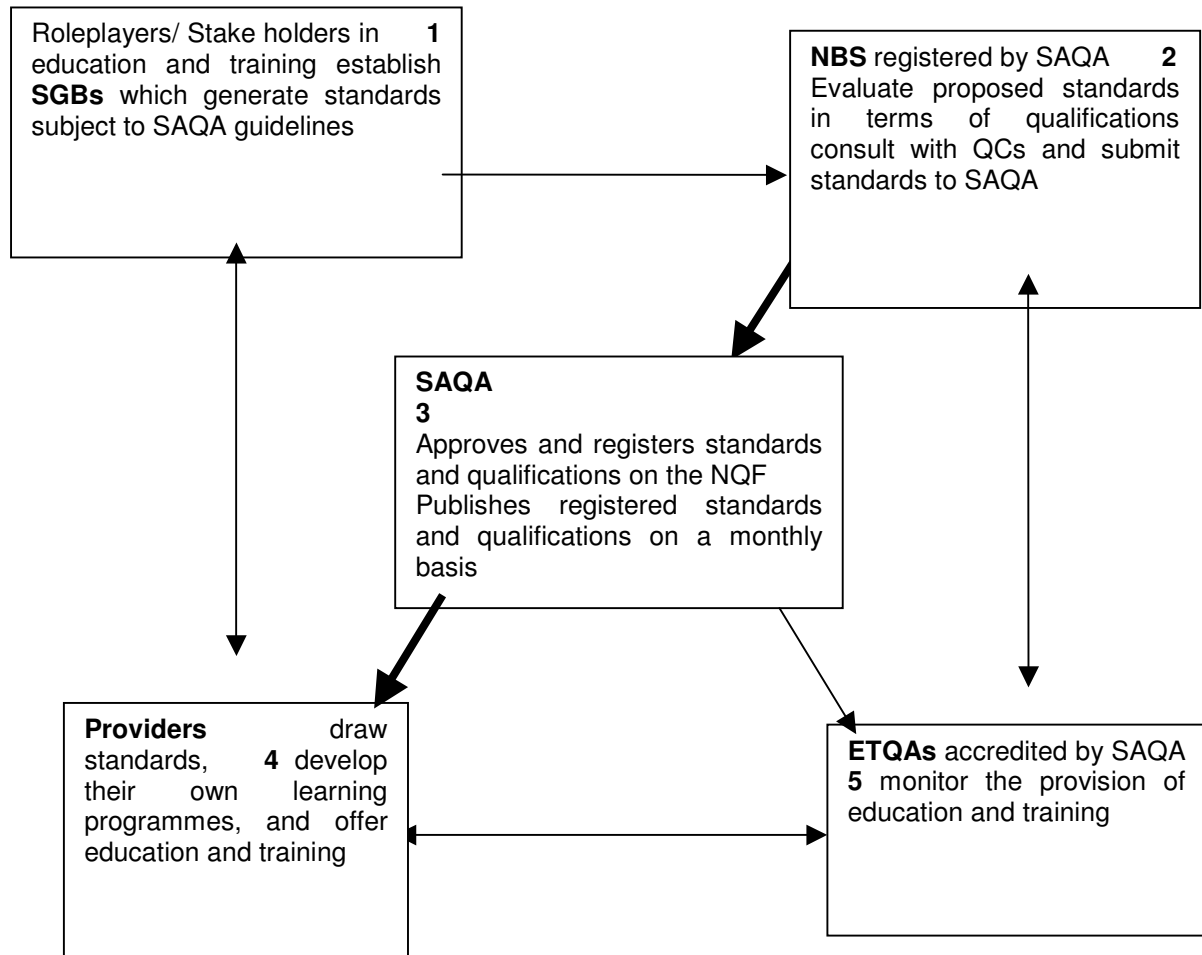
- Integrate theory and practice (erase distinction between vocational and general education)
- Be responsive to national economic social and political development
- Establish national and international credence
- Afford multiple ways learning
- Participation of all in establishing standards and certification in education
- Provide ease of entry into higher education for all learners
- Ensuring progression to higher levels
- Transfer of credits
- Recognition of previous learning experience (RPL)
- Provide guidance to learners

The structure of NQF and Curriculum Frameworks define new norms for teaching and learning and curriculum development. In this new framework Loggerenberg (2000:15) states its' features as follows:

- Content is not prescribed
- Principles for curriculum development are spelled out
- Guideline for teaching and learning are provided
- Essential, generic outcomes for teaching and learning are specified
- Essential fields of learning are described
- Approaches to evaluation are suggested

- Encourages flexible learning

Figure 4.14-1 Functions and Structures Associated with NFQ (source: Pretorius, F. 1998:15)



SGBs: Standard Generating Bodies- from an industry
 NSBs: National Standards Bodies- any one legitimate in interest in standards
 QCs: Qualifications Councils
 SAQA: South African Qualifications Authority
 ETQAs: Education and Training Quality Assurance Bodies- Bodies accredited by SAQA to monitored and audit standards.

4.15. ACADEMIC DEVELOPMENT: AD OR BRIDGING PROGRAMMES

Celliers (2000) argues that Academic Development (AD) or bridging programmes as they are better known have failed to produce students who meet the demands of a

21st century working environment. Celliers (2000:10) further argues that AD programmes help learners to perform better academically but fails to produce learners who possess developed self-reliance, inquiring minds and who embrace the learning culture that are the demands of contemporary higher education. Celliers further states that AD programmes focus on “ quick fixes instead of the long term, life long attitudes and thinking abilities that result in a sustained culture of learning as demanded by the ever changing working environment. It is Celliers’ contention that the fact that AD programmes classifies some students as needing help and other not, has the potential to lower learners’ sense of self-esteem. Celliers proposes that AD must be incorporated into the whole learning system of higher education learners. Celliers’ conclusion stems from the popular view held by many that generally higher education graduates are found to lacking in terms of the basic skills needed to effectively function in the working environment

4.16. PROBLEMS WITH IMPLEMENTATION OF NQF

Breier (2001: 23) states that while Technikons found it easier to adopt the concepts of the NQF, South African universities were more skeptical of its objectives. It was felt that NQF posed threats to the universities' goals and their academic autonomy. Most universities though did have their qualifications registered with SAQA, with differing motives, but the most important being, the need to have continued student subsidization from the government. In Table 4.16-1 below, Breier (2001:32) summarizes the implication of NQF and what the response of academics has been:

Table 4.16-1 NQF Implementation

The National Qualifications Framework	<p>All higher institutions of education must write their qualifications in outcomes format and conform to qualification registration requirements. Some academics had used the opportunity to change curricula, others were merely rewriting existing programmes in outcomes format.</p> <p>Some regarded the NQF requirements as a threat to academic freedom. Some claimed these procedures had left academics little time and energy for other curriculum development issues</p> <p>Technikons had adapted more easily to NQF requirements but the national approach adopted by Council of Technikon Principals had not always filtered down to academic level.</p>
---------------------------------------	--

<p>Programme development</p>	<p>Government had not provided clarity as to the meaning of 'programmes-based approach to funding'. Various notions of the term 'programme' existed although it was generally regarded as inter-disciplinary. Some regarded existing offerings (e.g. the BA degrees) as 'programmes', others not. The need for coherence was generally recognized but some defined this in terms of employer needs, others in terms of academic principles. At the time of the research, Technikons were concerned with qualification specification, a process that required stakeholder involvement and consensus. They regard programme development as a second stage. HAls were leading the field in both programme development and qualification registrations.</p>
------------------------------	---

4.17. CURRICULUM DEVELOPMENT PROCESS.

Traditional curriculum development has in the past been drawn by groups of experts who dictate what learners should learn in school. The outcomes based curriculum development process entails a co-operative and collaborative endeavor requiring contribution from a variety of groups involved in the education, training and business sectors of society. Through this means it is thought, a curriculum relevant to all diverse groups in the country would be developed (Pretorius, F. 1998:28).

NQF has twelve organizing fields elements as the main organizational mechanism to enable the setting of standards process (Breier. 2001:39). Subject disciplines and occupational areas define these organizing fields. Architecture falls in organizing field number 12 named Physical Planning and Construction according SAQA 1995(in Loggerenberg, 2000:21).

4.18. CURRICULUM DEVELOPMENT PROCESS USING OUTCOMES-BASED CURRICULUM APPROACH

SAQA demands that higher education qualifications be specified in terms specific and 'critical cross field' outcomes. Outcome based approach to education works on the principle that a series of learning outcomes, with defined purposes, are meant to give the learner applied competence, as well as the basis for future learning.

Breier (2001:26) describes applied competence as comprising the following characteristics:

- Practical competence (demonstrated ability to consider a range of options and make decision about practice).

- Foundational competence (demonstrated understanding of what others, or we are doing and why).
- Reflexive competence (demonstrated ability to integrate or connect our performances and decision making with our understanding so that we learn from our actions and are able to adapt to changes and unforeseen circumstances).

OBE describes the knowledge, skills, attitudes and values besides content, that a learner must acquire at the end of learning experience (Pretorius. 1998 27 and Loggerenberg. 2000:25).

SAUVCA (1999) report in Breier (2001:26) spells out what the model of higher education based on OBE means for academics when it stated that:

... for example academics will now have to make explicit their learning outcomes and assessment criteria and offer these for public scrutiny. When designing curricula, they will be required to work in programmes teams rather than as single individuals. They will also be required to view the curriculum from the learner's (and society's) perspective rather than from their own or from that of their disciplines or even faculties. Providers will need to 'design down' from the end point of the curriculum... Outcomes will be linked to the demands of disciplines as well as to those of the economy and society in general.

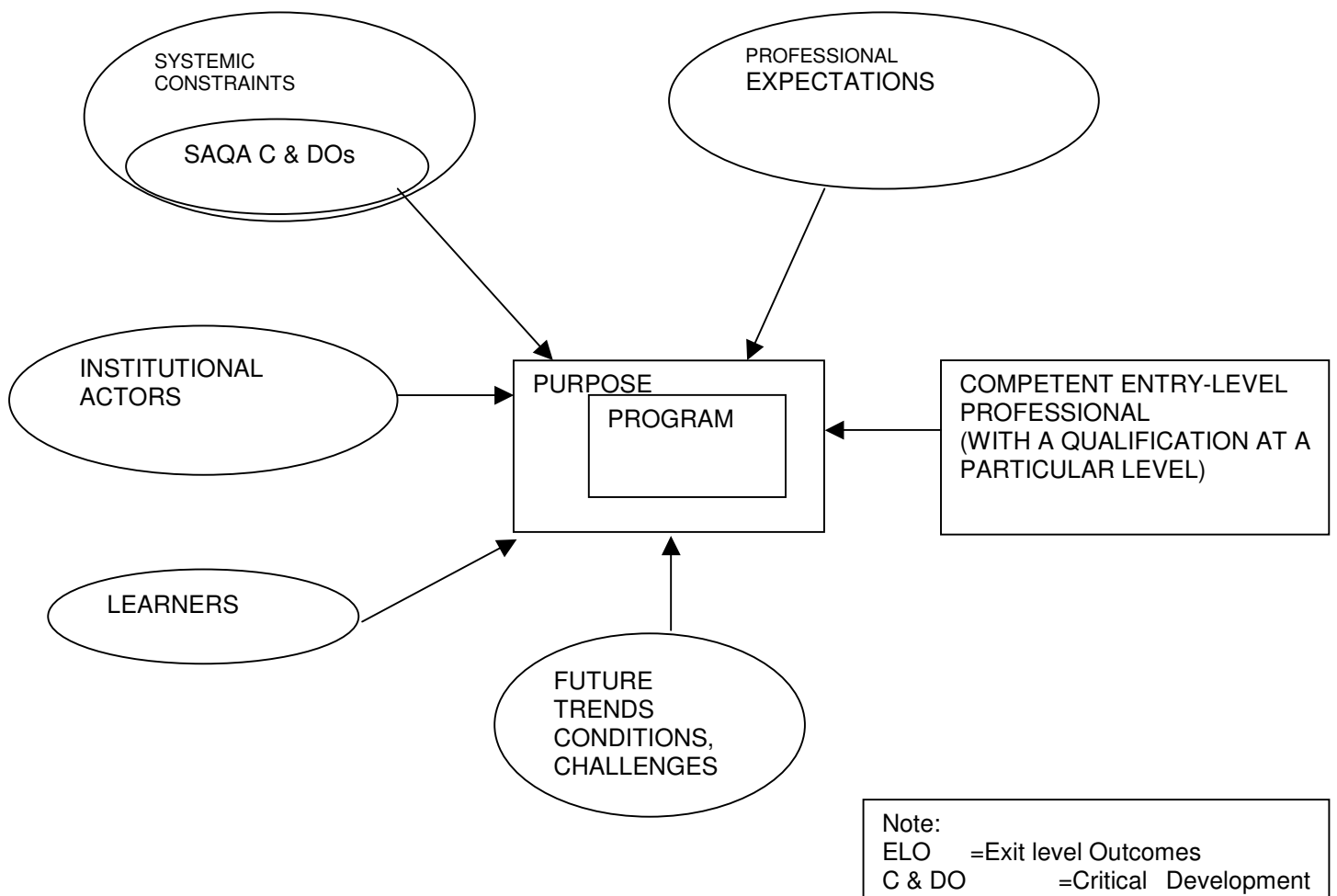
South Africa has adopted Outcomes-Based Education (OBE) as its' basis for higher education and its curriculum development. Killen and Spady (1999:200- 208) define OBE as having four distinctive characteristics. These are as follows:

- The intended student learning outcomes guide all other aspects of the curriculum.
- Learning focuses on the application of knowledge.
- Flexible approaches to teaching and organization are used to help students to learn
- Assessment is authentic.

In order to have curricula that reflect OBE characteristics SAQA has outlined outcomes that should guide all curriculum changes in higher institutions of learning. SAQA have determined the competence level that students need to attain before they graduate. Such levels can only be appreciated if all factors that determine the purpose of higher education in South Africa are taken into account. Killen and Spady (1999: 201) describes the traditional factors that determine the curriculum design of any program as:

- The expectations of the profession in which the graduates will work (Professional codes of conduct)
- The expectations of the community at large (service profession).
- The ideals and goals of the institution offering the programme (Mission Statement)
- The needs of the students
- Systematic constraints (Government laws etc)

Figure 4.18-1 Figure 1 shows some factors that influence curriculum design in the present day. Source: Killen and Spady (1999:202)



SAQA has placed additional requirements on the design of curricula for education in South Africa. This has been done through what it terms seven Critical Outcomes and five “Developmental Outcomes” which together must guide all learning and curriculum development in institutions of higher learning (Killen and Spady .1999-202). The seven Critical Outcomes are as follows:

- Identify and solve problems in which responses display that responsible decisions using critical and creative thinking have been made.
- Work effectively with others as a member of a team, group, organization, and community.
- Organize and manage oneself and one’s activities responsibly and effectively.
- Collect, analyse, organize and critically evaluate information
- Communicate effectively using visual, mathematical and /or language skills in modes of oral and/or written presentation
- Use science and technology effectively and critically, showing responsibility towards the environment and health of others.
- Demonstrate an understanding of the world as a set of related systems by recognizing that problem-solving contexts do not exist in isolation.

The rest of the requirements were not written as outcomes but are meant to make the learners aware of their importance in every programme. The five “Developmental Outcomes” were outlines by SAQA as follows:

- Reflecting on and exploring a variety of strategies to learn more effectively.
- Participating as responsible citizens in the life of local, national and global communities.
- Being culturally and aesthetically sensitive across a range of social contexts.
- Exploring educational and career opportunities
- Developing entrepreneurial opportunities.

The Critical and Developmental outcomes are what SAQA aims will define all the educated citizens of the South African society.

Killen and Spady (1999:203) suggest that the Critical and Developmental Outcomes must not be taught in isolation, but rather, use these outcomes to shape programmes of study and later incorporate the outcomes in the programme structure. They further add that, for this to happen there needs to be a clear understanding of the character of the citizen Critical and Development Outcomes. Killen and Spady have reclassified the outcomes into three broad categories, firstly in order to integrate the outcomes into programmes and secondly to define qualities of an individual who goes through OBE. They are as follows:

4.18.1 Life Roles

In this category the individual must be a:

- Responsible Self Manager
- Responsible Citizen
- Lifelong Learner who explores education and career opportunities
- Entrepreneur

4.18.2 Underlying Abilities

- In this category the individuals must possess or exhibit the following:
- Problem/ Information- Based Decision Making
- Effective Teaming/Collaboration
- Effective Communicating

4.18.3 Ways of Thinking

- In this category the individuals must possess or exhibit the following:
- Broad Systems Thinking
- Effective Learning Strategies/ Metacognition
- Cultural/ Aesthetic Sensitivity

Killen and Spady (1999:204) see the above classification as a useful guide for curriculum planners than the vague statements from SAQA and Technical Committee on Revision of Norms and Standards for Teacher Education. They recommend that

curriculum planners could transform the categories into practice by organizing their thinking around a matrix shown below in Table 4.18-1.

Killen and Spady go on to suggest that the four Outcomes under the Life Roles category are the major defining elements in curriculum design. In their view once a student has been adjudged to have attained the four Outcomes under the Life Roles category, then it can be assumed that they can function effectively in carry out life – role functions: Personal affairs, Civic affairs, Learning affairs, Entrepreneurial affairs and additionally their Career affairs.

Table 4.18-1 OBE Curriculum Design Matrix. Source: Killen and Spady(1999: 204)

ENABLING ABILITIES		LIFE ROLES				
		CAREER	ENTREPRENEURIAL	CIVIC	PERSONAL	LEARNER
1. Essential	Specific					
	General					
2. Technical Skills	Specific					
	General					
3. Interpersonal	Relations					
	Communications					
4. Management skills	Self					
	People					
	Things					
5. Professionalism	Core Values					
	Principles of Professionalism					
6. Life Orientation	Systems Thinking					
	Cultural Sensitivity					
Exit Level Outcomes		Total Career Performance	Total Entrepreneurial Performance	Total Civic Performance	Total Personal Performance	Total Learner Performance

From the curriculum design matrix the following questions can be asked to help define the critical outcomes that ought to be attained by learners in terms of Life Roles, Underlying abilities and Ways of thinking:

- Your curriculum design and implementation must ensure that learners systematically develop that **Essential Knowledge?**
- Your curriculum design and implementation must ensure that learners systematically develop those **Technical Skills?**
- Your curriculum design and implementation must ensure that students systematically develop those the **Interpersonal Skills?**
- Your curriculum design and implementation must ensure that learners systematically develop those **Management Skills?**

- Your curriculum design and implementation must ensure that learners systematically develop this ethic of **Professionalism** and embody it in all their life Roles?
- Your curriculum design and implementation must ensure that learners systematically develop these **open-minded Life Orientations** and embody them in every aspect of their Life Roles?

4.18.4 Professional Competences (Stark et al. 1986:13)

In terms of competences the learner should be trained to achieve the following:

- Conceptual competence
- Technical competence
- Contextual competence
- Interpersonal competence
- Integrative competence- “professional judgment”
- Adaptive competence

4.18.5 Professional Attitudes

In terms of attitudes and values the learner should be trained to achieve the following:

- Career marketability
- Professional identity
- Ethical standards
- Scholarly concern for improvement
- Motivation for continued learning

Three other important issues have caused professional fields to engage in continuous self-examination of the role and the nature of the professional preparation. They are as follows (Stark et al. 1986:71):

- The diversification of clients

- A growing conceptual knowledge base
- The impact of technology

Educators seem to devote a comparatively little attention to “adaptive competence.” They are struggling to keep abreast of the changes that have already significantly affected competence that graduates must exhibit (Stark et al. 1986:72). The issue of paying more specific attention to diverse clients pervades all fields (Stark et al. 1986:76)

4.18.6 Student socialization

What can be learnt in simulated real practice situations? The role of modeling of desirable behaviour, the provision of appropriate relationships with field supervisors? Such concerns about field experiences and their role in inculcating attitudes considered desirable to the advancement of the professional fields are pervasive, even in those fields where integration of theory and practice is left to students’ initiative (Stark et al. 1986:77).

Research is needed to assess the major work being done in universities and the education of graduates prepared for occupations commonly thought of as professions. Steps needed are as follows:

- Specification of competencies and attitudes to be developed among professional graduates, generally and specifically of each professional field;
- Assessment of the extent to which graduates achieve the outcomes;
- Identification of links among specific educational processes and specific outcomes:
- Better understanding of the extent to which the outcome is actually useful and important in professional practice

4.19. CURRICULUM AND ACADEMIC PROGRAMME DEVELOPMENT IN HIGHER INSTITUTIONS OF LEARNING

Breier (2001:64) states that universities in South Africa have engaged numerous methods curriculum planning. Some universities, adds Breier, used a holistic approach, which linked their academic planning to revision of their university mission

statements based on the; global trends in higher education; specific changes in South African higher education, rationalizing of financial resources, improving teaching and learning; and serving an increasingly diverse student population.

In response to the priorities for new programme planning, Breier notes that at least three Technikons referred to multiculturalism as a priority while hardly any of the universities mentioned multiculturalism in their responses. (21 universities and 15 Technikons both HAU and HDU institutions).

When programme change, as initiated by the requirements of NQF and SAQA are considered, the process, according to Breier (2001: 82-84) is fraught with problems and to some extent this has served to entrench previous imbalances than help to redress imbalances.

Breier (2001:82) suggests three issues, which need adequate and immediate attention if the programme planning process was going to achieve the intended CHE policy goals. These issues are as follows:

- Clear policy guidelines from the DOE, SAQA and the CHE and, where necessary, a re-interpretation and explanation of policy for all to understand.
- Discussion, or a forum for discussion, of curricular relevance in the context of a transformed South Africa.
- A re-emphasis on the development of postgraduate programmes, where there was evidence of undue focus on the development of undergraduate programmes.

4.20. ARTICULATION

Articulation refers to the recognition of qualifications from one institution by another, which may be at a university level or University to Technikon level or vice-versa. Breier (2001:72) states that there has been a lack of clarity around the provision guidelines and how articulation could take place though many institutions had defined the guidelines to their academic staff as to how various programmes and qualifications are articulated with other programmes within the institution or other higher education institutions. While there was some cooperation among some institutions, fierce rivalries and jealousy were generated between some.

4.21. PORTABILITY OF CREDITS AND CREDIT VALUES

Every model in a higher institution is assigned a credit value. Programmes were given the right to determine what values would be given to which models, though bearing in mind that all undergraduate modules had the same number of credits. This was to increase flexibility of student movement within and amongst other institutions. Breier (2002:74) argues that comparing credits from one institution to another is potentially problematic as there is no way of ensuring equal meaning between different credits in different institutions. Interpretation of SAQA guidelines on the meaning of credit varies. In architecture programme the studio programme is the dominant module. Various schools of architecture may give it varying credits. More research needs to be carried out to ascertain the credit values in architecture in order to ensure greater articulation and transfer of credits.

4.22. ACCESS, FLEXIBILITY AND LIFE LONG LEARNING.

Most institutional responses do not have clear strategies for addressing the academic and developmental needs of the adult learners especially those who were historically disadvantaged. Breier (2001: 74) states that higher institutions of learning showed little by way of evidence that its was offering adults the opportunity to study at those institutions. She adds that, the process of concept of RPL is still not well understood and developed in higher institutions of learning. The information brochures or handbooks of most of architecture schools in South Africa do not provide detailed information on RPL. In extreme cases an individual without a matric certificate has no opportunity to study architecture.

In the architectural realm lifelong learning is perceived to be Continued Professional Development (CPD) less so as giving opportunities to the historically disadvantaged individuals.

4.23. QUALITY ASSURANCE

A number of new measures have been put in place in higher institutions to ensure quality of programmes. They are according to Breier (2001:75) as follows:

- Working groups within the planning system to focus on academic quality and related issues

- Accreditation and programme committees to continuously monitor programmes and programme development. Also working groups with a focus on the quality of undergraduate and postgraduate programmes.
- University quality promotion units and external evaluation programme committees.
- A central representative SAQA committee that devoted time to quality assurance of programmes
- Student evaluation of academic staff, moderation by external examiners, evaluations by professional bodies and peer review with departments.

4.24. DISHARMONIOUS PARTNERSHIP BETWEEN SAQA AND HIGHER EDUCATION.

Implementation of the NQF policy in Higher education through SAQA has not gone as smooth as it was envisaged. Kraak and Mahomed (in Breier. 2001:152) argue that the process of transforming higher education institutions has been slowed because of resistance from SAUVCA and others operating within SGBs. Poor communication between various bodies- SAQA, SAUVCA and DoE- is also cited as a contributing factor to implementation of the NQF policy in higher education. SAUVCA has also been particularly critical of the methods that underpin outcomes-based education (OBE) as well as the tremendous amount of paperwork required to write qualification in outcomes-based format. Some SGBs were cited as operating independently of institutional or SAUVCA mandate.

This has led to the establishment of the Joint Implementation Plan (JIP), which comprises SAQA, DoE, CHE, SAUVCA, and the Committee of Technikon Principals (CTP). SAQA will have to liaise with JIP regarding establishment of SGBs. Though establishment of JIP may have been a victory for SAUVCA, other are skeptical whether they have the capacity to carry work related to SGBs (Breier. 2001: 153)

4.25. RESISTANCE OF NQF FROM HIGHER EDUCATION

Resistance to NQF policy and SAQA by the higher education institutions is threefold (Brier. 2001:154).

- The first is the immense bureaucracy which accompany the regulations is problematic.
- Secondly it is the refusal of higher education institutions to accept that the units standards set by NQF provide a mere template that defines the minimum outcomes required to acquire a qualification. Higher institutions perceive this as loss of their proprietary rights to a curriculum.
- Thirdly, many higher education institutions object to the NQF/ SAQA process because of its perceived potential to favour vocational qualifications at the loss of academic orientated programmes.

Kraak and Mahomed (in Breier. 2001:155) conclude that higher education institutions are resisting change by exempting themselves from the original requirement of SAQA policy. Issues of articulation, access and size and shape are lost arguments about vocationalism and neo-liberal change.

4.26. INTEGRATED AND COLLECTION TYPE- CURRICULA

Ensor (in Breier. 2001:110) states that two types of curriculum approaches can be distinguished based on classification of curriculum content. Classification in this respect relates to the structuring of knowledge based on the division of labour and the strength academic identities. It is not the comparison of curriculum content. Weak classification means the content is less insulated. Strong classification means a well-defined body of knowledge and protected course content. The two categories are as follows:

Collection type curricula

Content well defined, and well insulated from each other. This reflects a curriculum structure that is made up of subjects that are strongly insulated against each other. Student choice of programme is generally limited.

Integrated type curricula

Classification boundaries are weak and the content stand in relation to one another. Its' objective is to create new course programmes by combining many disciplines into single identifiable ones, based on some organizing concepts. Integrated curricula aim to give the students more programme choice.

4.27. CRITICAL ANALYSIS

The discussion above has highlighted the complex nature of curriculum change but more importantly it has outlined the process and the legal framework of how change in architectural education and profession can be achieved. There is a commitment by the South African government and its agents to clarify those concerns that are critical to the South African society. Emphasis is on transformation yet there is also a recognition that this should not be at the expense of quality. Quality is implied in requirements of graduates of higher learning institutions to be locally knowledgeable but also to be internationally competent. The debate on OBE has also affirmed the need for future graduates to possess skills that will prepare them for a changing working environment, which is no longer as static as the traditional disciplinary environment. The implication for curriculum is that students will have to acquire other skills than the traditional specific disciplinary knowledge. These demands for other skills are also raising suggestions that some knowledge will have to be given less emphasis for new ones in architecture. There is also the realization that the nature of the student has changed over time. These institutions of higher learning must offer students a variety of ways of acquiring their qualification. Of specific importance in South Africa is access to learning by prospective students who do not have the basic academic entry requirements but who would like to study in higher education. The questions of RPL and Academic Development (the bridging courses) become more critical in education for architects. The curriculum analysis of schools of architecture discussed in Chapter One reveals that only one programme has a dedicated bridging programme incorporated in its architecture curriculum. The rest have none or rely on related disciplines to provide them with prospective students from disadvantaged backgrounds. Such disciplines mainly concentrate on improving students' mathematic, science and communication writing skills before they admitting them to their programme. But as seen from Celliers' (2000) argument above, the success of such programmes very much in doubt.

From the studies done on other professions in universities, it is clear that the process of change has not been without problems. Characteristically resistance to changes has been a common feature as departments, faculty and school tried to preserve their existence. This resistance points to one critical need, which is, the retraining of educators in the skills and modes of delivering new knowledge. This is important because if the educators do not understand and share the new vision the propensity to rewrite old curriculum in new packaging or vice-versa becomes a real obstacle to curriculum change and subsequently society.

In the last chapter it was shown that the extent to which schools of architecture have interpreted their NSB 12 desired stipulated outcomes in terms of course restructuring and time allocation is not systematic. In certain cases some outcomes cannot be linked to specific course/modules. There is no guarantee that the desired outcome will be achieved with such ordering of curriculum. Most of the curricula are still organized in the traditional fashion. There is a need to educate the architecture faculty in universities in the importance of implementing the OBE/NSB principles outcomes because it questions the very beliefs in which they have built their profession.

The process of contemporary curriculum development as seen above has become more complex. Curriculum development now has multiple contributors, which makes the process very difficult and more demanding than traditional processes in which the interest of a profession were the single most determinant of curriculum.

4.28. SUMMARY AND CONCLUSIONS

This chapter has shown that the curriculum process in higher education has evolved into a complex entity that requires educators to acquire more knowledge than they possess if change that would benefit the whole of the South African society is to be achieved. Understanding this process is important, because if faculty in schools of architecture fail to do so, it may lead to resistance to the ideals of OBE as has been shown to happen in others universities discussed above.

Important issues that will have to be addressed in architecture curriculum are as follows:

- There needs to be research into how the schools of architecture have responded to new legislation especially implementation of NQF requirements and OBE.

- There is need for further research into how Africanisation can be an integral part of architecture curriculum as dictated by the context and society.
- There is need for further research articulation of architecture programmes in among schools of architecture.
- Studies also have to be conducted into the response of schools to the changing working environment, prospective student profile, RPL and AD. These will help define and articulate schools of architecture's response to societal needs.
- Distance education in architecture needs to be explored as a possible option.
- Retraining of faculty in architecture schools in curriculum processes is critical for the successful implementation of curriculum change. Failure to do so will further entrench traditional practices as has happened in some institutions of higher education.

- There is need to research in articulating architecture programmes to allow for development of a variety of architectural programmes, which can give students greater choice of architectural programmes and portability of credits . This is particularly important in the light to South African governments policy of rationalizing resources.

The above discussion has shown the range of needs that have to be addressed in schools of architecture and curricula. Therefore the proposition that there is a scale of needs of a changing South Africa from global through to local scales which are not addressed in the curricula in schools of architecture in South Africa is supported.

CHAPTER 5 THE POST-MODERN ARCHITECTURE CURRICULUM

5.1. SUB- PROBLEM 4

For the education of architects what curriculum model may effectively address the needs of a changing South Africa.

Proposition 4

A curriculum model can be formulated which effectively accommodates the needs of a changing South Africa in the educational programmes for architects.

5.2. OVERVIEW OF CHAPTER

In the last chapter it has been noted how schools of architecture have responded to changes in South African society. It has been pointed out that most of the change that has occurred in terms of curriculum, has been as a result of influences that are external to architecture schools– change that has originated, in the main, from policies enacted by the government in terms of legislation, accreditation bodies, architectural practice and to a lesser extent, from schools themselves needing to change. Collectively these, influences, represent the vision of the South African society which architecture education should be serving, and striving to understand and construct. The construction of this vision in architecture will begin when curricula of schools of architecture and architects' codes of ethics begin to address the needs of the socially and economically disadvantaged as outlined by South African government policies referred to earlier in Chapter Four.

This chapter outlines the nature and philosophical concepts that will begin to address the problems of South African architecture curriculum as stated in the importance of problem and the sub-problems. The philosophical basis proposed for this study is the post-modernist curriculum outlined in Chapter Two. The post-modernist curriculum approach was adopted because it embraces the concepts of affectiveness, problems, emotions and uncertainty, which this study has shown in Chapter Four to characterize the South African society. This philosophy is used in conjunction with the Social Problems principle of curriculum organization and OBE principles outlined in Chapters Two and Four respectively. Post-modernist curricula exhibits the following characteristics:

- A reduced amount of content loaded with detail. A basis for general formative education is focused on the mastering of general competencies and fundamental relationships in real life.
- The rigidity of traditional subject content is repealed in favour of the immediate supple integration of any new knowledge and /or processes in the curriculum to make it immediately relevant
- Traditional disciplinary boundaries will be blurred in favour of integration, co-ordination and inter-relatedness of concepts. The emphasis is on holistic concepts and conceptual frameworks.
- Science will be portrayed as a dynamic field challenging established truths. Scientific activity is regarded as a human activity, which is responsive to human and societal perceptions and needs. Science is no longer viewed as mechanistic, impersonal and ultimately objective.
- Because of the integrated and inter-related nature of reality, content will rather be organised around themes and problems, than around the structure of a single discipline.
- The curriculum will be sensitive to the values of multiple cultures, races, males and females and will allow for different learning styles.
- The curriculum will devise co-operative and collaborative learning experiences, which will discourage a teacher-centered and teacher dependent attitude. It implies a break away from a textbook and lecturing approach to an activity-based hands and mind approach.
- The curriculum has to ground theory in and develop in practice. Teachers and learners develop their own curriculum through continuous interaction.
- The curriculum needs to enhance self-organization by being rich in diversity, problematics and heuristics, and a classroom atmosphere, which encourages exploration.

- The curriculum has to empower both teachers and learners, thus creating an environment where they can engage in constructive dialogues.
- The curriculum should encourage interpretation, rather than explanation of knowledge
- The curriculum should adopt developmental planning, which allows for greater flexibility and modification.
- Evaluation will be an interactive process, in which feedback is provided to the learner. Communities' support is required to help the learners through constructive critiques.

Through synthesis of the architects' survey responses and issues raised in literature review, the diverse educational and critical concepts that should underlie architecture programmes of the future, a model curriculum is proposed in this study to comprise Post-modern philosophy of learning, concepts of critical thinking, critical pedagogy, universities' missions, and sustainability. Additionally this thesis proposes that new curriculum should be organised using the social problems and OBE principles because, collectively, they address wide spectrum of problems that are unique to South Africa. This is achieved by using experiential learning in the structure of the programme for learners and tutors that signals the shift from the traditional transmission model of learning to one of co-creation of knowledge requiring active participation of not only the teachers but also the learners.

5.3. CRITICAL THINKING

Accreditation reports of schools of architecture discussed in Chapter Two of this study stresses the importance of enabling students to develop analytical and critical thinking skills. Brown and Moreau (2004:7) further argue that, in the light of multiple and vibrant changes that have engulfed the design professions and society as a whole, the professional has the opportunity to provide insight into ways of addressing the crisis. But, they contend, the ability of the professional to make meaningful contribution to addressing change will be possible only if they are trained to think in a critical manner. This entails practitioners- in this case to borrow Teymur's term, educational practitioners- acquiring an education that has equipped them to take, as Brown and Moreau say, "an ethical stance towards issues posed by the

context of practice and society as a whole". Through critical thinking, learners can examine the values that underlie their ethics and guide their actions. Similarly it is through critical thinking that schools of architecture can examine their practices, assumptions and the values that underlie their curricula.

Critical thinking is not a new concept within architecture schools. Indeed many educational practitioners would argue that they do teach their learners critical thinking skills. But it is also possible that what they mean maybe something different. Critical thinking is, in this case linked to developing an attitude of being self-critical of the assumptions that one makes and values in deciding what to teach, how to teach and what to include or exclude in architectural education.

5.4. CRITICAL PEDAGOGY

It is the argument of this study that a Post-Modern philosophical approach to curriculum facilitated by critical pedagogy ideals can lead to transformation of learning and practice of architecture in South Africa. While critical thinking has been identified as a way to equip graduates with knowledge to tackle a dynamic society, this study advocates for schools of architecture to use critical pedagogy to address change on a much wider scale. Critical pedagogy differs from critical thinking because the former, involves practices that have potential to transform oppressive institutions or social relations, mainly through educational practices, while the latter focuses on the analysis of situations and arguments to identify faulty or unreliable assertions or meaning. Critical thinking is aimed at the individual and generally ignores pedagogical relations between the teacher and the learner and those between learners. Critical pedagogy entails some kind of action or social change of which critical thinking is devoid. Critical pedagogy, according to Crysler (1995:208) and Keesing-Styles (2003:2) encompasses understanding curriculum as a political context, a position that many writers as revealed in the literature review of this study were advocating. This entails understanding architecture not only in terms of the practice but also understanding architecture as it is constructed by society and vice versa.

5.5. TYPES OF GRADUATES

It has been noted in Chapter Two that all architecture schools primarily produce the same type of graduates who are primarily attuned for practice in the architecture profession than for employment in the wider society. This has, as already stated, the

disadvantage of potentially saturating the market for architects, a phenomenon that is especially more evident in periods of economic strife in a country. The most common reaction has been for practitioners is to complain of the increased numbers of new graduates than to address the question of how architectural graduates can be more useful in society, more in the manner that doctors and lawyers are utilized by society. For instance all graduating doctors have to do a mandatory year of community service. Why can architectural graduates be asked to undergo the same process in which they would be better informed of the needs of the local people and the environment? Within the architecture profession and discipline, schools are urged to reduce intake of learners in order to avoid potential saturation of the architectural market.

Further, because schools produce the same type of graduates, they ideally compete for same pool of learners. This invariably means that the quality of learners in one school affects the positively or negatively the quality of others learners in others schools. Schools are, invariably, in competition with each other than being complementary each other in providing the learners with a variety of possibilities in society.

A school that produces graduates who are exposed to various professions in the first years of study has a high chance of attracting new students than the traditional single discipline programmes. Further, an architectural programme that has an integration of its courses with engineering, planning (both urban and rural) and building economics has a more likely chance of producing graduates who are capable of adapting to future changes in the building industry.

That is what schools of architecture that want to retain and attract sustainable numbers of students in the face of shrinking public funding for higher education must be planning in terms of future evolvement of the degrees they offer– producing graduates who can adapt to changes in society.

5.6. SUSTAINABLE ARCHITECTURE PROGRAMMES

In Chapter Four the importance of how various programmes and qualifications can be articulated with other programmes within the institution or other higher education institutions was discussed as one of the South Africa government's objectives for transforming of higher education. Further it was the government's intention to increase flexibility of student movement within and amongst other institutions. In order to do this, there is need for students to be able to carry credits from one institution to another. Schools of architecture primarily produce the same type of

graduates who are primarily attuned as stated earlier, for practice in the architecture profession than for employment in the wider society. This situation is an unsustainable method of producing architecture graduates. This system of producing graduates for the architectural profession needs to be rethought in terms of principles that will ensure sustainability in methods learning, teaching and practicing architecture. The thesis of this study therefore argues for the use of the principles of sustainability to derive an appropriate curriculum. Brady (1996:42) advises that

...sustainability must be philosophy that informs the education of an architect at every level- not subject matter for another course requirement for the professional degree.

The Rio Summit of 1992 defines sustainability as “ providing for the needs of the present without detracting from the ability to fulfill the needs careful use of resources for development without jeopardizing the opportunities for future generations”. Others have expanded this definition to include issues of social justice, democracy, diversity etc. Hargreaves and Fink (2004) outline seven principles of sustainable leadership which have been reinterpreted in this study to mean the following:

- Sustainable Curriculum Matters
- Sustainable Curriculum Lasts
- Sustainable Curriculum Spreads
- Sustainable Curriculum is Socially Just
- Sustainable Curriculum is Resourceful
- Sustainable Curriculum Promotes Diversity
- Sustainable Curriculum is Activist

5.6.1 Sustainable Curriculum Matters

In this thesis it is argued that for change in curricula to be meaningful it is important to have a curriculum framework that provides learners with the intellectual, social and emotional capacity with which to critically examine the past in order for them to make responsible decisions about the future.

5.6.2 Sustainable Curriculum Lasts (Evolves)

Curriculum will achieve its desired objectives as long as it aligned to its context. It must have built into itself the ability to respond by making the lecturers and learners aware of the context. This can be achieved by having backward and forward looking plans in every school.

5.6.3 Sustainable Curriculum Spreads

The responsibility for what and how a curriculum is constituted does not rest in the hands of the traditional creators of knowledge only – the experts and academics – but involves all stake holders in school, practice, and the wider society who will uphold the curriculum if they can claim communal ownership.

5.6.4 Sustainable Curriculum is socially just

A sustainable curriculum benefits all in society. In the context of architecture, schools can compliment each other by offering diverse programmes that are not in competition with each other. This means that there will be no competition to attract the best learners and staff amongst schools but an understanding of what each schools offers and how learners can be better assisted in attaining the desired education. Such a curriculum ensures that the whole environment of learning architecture is seen as an interlinked and interdependent system where each school whether a Technikon or University organ affects operations of others.

5.6.5 Sustainable Curriculum is Resourceful

Such a curriculum provides schools with an opportunity to network, to collaborate, to learn from and support other schools. The unique knowledge niches of each school can be nourished for the benefits of all learners

5.6.6 Sustainable Curriculum Promotes Diversity

A sustainable curriculum recognizes and cultivates many different kinds of knowledge and learning processes. Excellence in both learning and teaching is extended to include many aspects of society that traditionally were deemed to be outside the realms of architecture for example indigenous environments.

5.6.7 Sustainable Curriculum is Activist

A sustainable curriculum engages with its environment in a mutually beneficial manner. Such a curriculum is one that engages critically and assertively with proposed changes in society.

5.7. FACTORS THAT INFLUENCE OF CURRICULUM MODELS IN UNIVERSITIES:

Apart from the general issues cited above that influence curriculum models, three specific factors that are unique to every school can be identified, that determine the types or kinds of curriculum model produced by schools of architecture.

5.7.1 The Missions of Universities.

All universities have specific visions about how they should interact with society. Universities seek to be the domains of new knowledge production in the disciplines they offer. This they do through research carried out by academics. To this traditional function has been added the contemporary need for universities to produce knowledge that helps solve society's contemporary problems and thus relate theory to practice. Thus schools of architecture have to provide for its learners curriculum experiences that will foster the university's goal. Makgoba (2004) exemplifies the role of contemporary universities in South Africa when he comments:

... where teaching emphases and research directions are underpinned by the insights and the lived experience of students and staff, the University has an opportunity, if correctly utilized, to develop unique expertise and make significant contributions to the global fund of available knowledge at the same time as it serves the national agenda of social needs and priorities

Architecture programmes have the potential to lead other disciplines within the universities in providing not only relevant learning experiences but also academically complex body of knowledge.

5.7.2 Lecturers and their Specific Expertise and Interests

All schools of architecture in South Africa perceive their prime mission to be the furtherance of design in the built environment as revealed by interviews with the heads of department L, Bremner (personal communication September 08, 2003), J Noero (personal communication, November, 2003), O Joubert (personal communication August 6, 2003) A Adebayo (personal communication February 2004) and T Rushmere (personal communication February 2004).

The lecturers in a school of architecture perceive themselves to be at the forefront of knowledge production either as practitioners of architecture or as researchers of a variety of issues. Regardless of the domain of their interests, what they practice comes back to the learners in two ways: either in the explicit form of a written curriculum in a particular study area, or in the implicit form where lecturers' activities are incorporated into the assignments and projects especially the design studio. This can be seen from the analysis of schools of architecture in South Africa, Free State school with Earth Studies being written in the curriculum, Wits Universities with Urban problems and Housing (to a lesser extent) being emphasized in their respective curricula.

5.7.3 Location of School within a Faculty

Location of a school of architecture in a faculty affects potential and eventual collaboration relationships between schools. Faculty members who are in constant contact with each other have a natural potential to develop programmes together if the incentive to change is the faculty members' own initiative. Hence where an architecture school is located in an engineering faculty it is likely that new programmes will involve a combination of architectural and engineering aspects to programme a new breed of specialists with a bias toward architecture and engineering as in the example described by Howieson (2000:161) and the architecture and planning degree described by Manlay and Claydon (2000:144). In South Africa a typical example is the architecture school at the University of Pretoria which has developed new programmes that expose learners to aspects of three different but related professions i.e. architecture, interior architecture and landscape architecture.

5.8. THE FACULTIES LOCATED WITHIN A PARTICULAR UNIVERSITY.

The variety of faculties existing with a particular university also serves to create the possibility of new programmes that may be used to enrich and diversify the study of architecture. The importance of making architecture more relevant in society has increasingly received emphasis in recent times. Architects have been urged to understand the needs of the whole society than respond to the market demands. Moreover it has been stated that since society is not homogenous, professionals have to be taught how to interact with the many different cultural groupings that make up society. Knowledge of community dynamics and the importance of language in creating meaning have become critical for architects. Powers (2001:78) emphasizes this view when he states that,

...Since meaning is derived from language and language is interdependent between two persons, it follows that social-cultural processes of negotiation, cooperation, conflict, rhetoric, rituals, roles social scenarios, and the like are crucial factors in the development of meaning and reality.

Having faculties that engage with these societal problems that are normally not as systematically undertaken by architecture schools within a university creates an opportunity for architecture faculty and their learners to understand and apply themselves these societal issues.

Another issue of increasing importance is that of understanding economics, business enterprise and accountability. While architects know the creative aspects of design, the economic and entrepreneurial side of projects receives little or no attention such that other professions have arisen to take care of the economic aspects of projects. The above issues illustrate the possible new areas of potential programmes for architecture through collaboration with other faculties that teach social economic and political sciences.

5.9. EXPERIENTIAL LEARNING.

The analysis of schools of architecture curricula reveals the traditional nature of architecture education, that knowledge and knowledge construction originates from the faculty and professional institutions. Contemporary schools of architecture retain most of the learning activities. Further the accreditation reports reveal the problem of

utilizing the year–out in architecture education. Schools of architecture have no way of monitoring the year–out activities or granting learners credit for such activities. This study argues for a systematic way of incorporating experiential learning in the proposed curriculum. It is proposed that learners should spend at least a quarter of their time in university doing experiential learning projects in society.

Learners will be able to do this by spending the third quarter of their every year of study on the community projects. Experiential learning would be differentiated among various learners' years as shown in Table 5.9.1.

Table 5.9-1 Experiential Learning according to year of study

First year	Cross cultural - learning
Second year	Service learning Public, housing
Third Year	Work based-learning
Fourth and Fifth Year	Specialized

Typically experiential learning would be scheduled in the third quarter of the year so that learners could write reports of their experiences and have the time to test the learning with projects in the studio. In this way learners would have experienced the Kolb's four-stage cycle of learning (Conrad. 1978:126)

- First concrete experience
- Observations and reflections
- Integration of concepts and generalizations into theory to frame experience
- Testing of these observations in new situations.

Table 5.9-2 Position of Experiential learning in a year of study

1 st Quarter	2 nd Quarter	3 rd Quarter	4 th Quarter
		Experiential learning	

This system also has the added advantage of freeing the lecturers from teaching in the third quarter so that they can engage in research activities some of which may actually arise from these activities thus defining new ways in which their architecture learning may be learning.

5.10. SOCIAL PROBLEMS AS AN ORGANIZING PRINCIPLE FOR ARCHITECTURE CURRICULUM

It is the argument of this thesis that future curricula of education for architects in South Africa should be based on social problems as the organizing principle. The reasons for advocating such an approach are manifold:

- First, this study reveals in the survey of architects, that the majority of architects are seldom prepared in their architecture schools to deal with the problems of the poor. Poverty afflicts a greater population of the South African society, most of whom are black people. Poverty is perceived to be a racial issue. Democracy and poverty alleviation are inextricably linked. Democracy has been achieved but not equity. For racial equity to prevail in South Africa poverty will have to be addressed and in this case the role of the architect in poverty alleviation must be spelled out. However, this does not mean that the architect or architecture disciplines understands or has all the answers to poverty, but what it means is to clarify the contributory role architecture and architects can play in poverty alleviation.
- Second, this study also reveals that in schools of architecture in South Africa housing is given little emphasis in the curriculum. Superficial coverage of housing knowledge material is prevalent. Secondary information reveals that there are few learners studying the housing programs at master's level. Yet housing constitutes the largest portion of building work in built environment. South African and Africa's housing problems are far from being solved. How can architects in this context increase their influence in housing apart from the focus on aesthetics as part of government's vision of housing for all?
- Third, this study has also revealed and is supported by many others that architecture education South Africa is oriented towards the practicing architectural office that is driven by market demand for building (which

excludes housing). Community service lies on the peripheral of architecture concerns because of its lack of aesthetic challenge for the architect. While most architects aspire to work in design aspects of the profession, there are indeed some who may want to engage in community service. Contemporary architecture programmes hardly have the strategies or the options to enable learners to develop their knowledge in this area of interest.

- Fourth, this study reveals that the design studio can no longer be taught in the traditional manner. Not only new ways of experiencing the design studio need to be developed but also establishing new knowledge that architects require given that design knowledge alone is not enough to practice architecture.
- Fifth, this study has established that most of the knowledge is learnt within the university campus. Experiential learning that learners acquire in the year-out is not credited by most of the schools. Learners receive little no credit for the knowledge gained in the year-out. The lack of a systematic method of assessing such knowledge means that learners have little chance of critically reflecting what they learnt in the year out thereby missing a real chance to learn and teach others.
- Sixth, the social problems approach posits that education is not a value free process as seen from views of other writers on the curriculum in the literature review. Adapting such a stance allows this study to explore the hidden emphases in architecture education and how they can be countered.
- Seventh, the social problems approach being holistic in nature allows the curriculum for education of architects to be defined beyond the narrow definitions of academic disciplines.
- Eighth, the social problems principle emphasizes the future.

Organizing a curriculum on the social problems principle is premised on the perception that, without resolution of society's problems, individuals will never develop to their fullest if social ills remain unresolved (Conrad: 1978: 32). Social

problems organizing principle ensures that education for architects is a function of society. In the proposed curriculum model the concern for social responsibility is paramount as well as the need to integrate knowledge to context. Four program emphases are evident in the proposed curriculum:

- Flexibility and learner initiative is encouraged
- An emphasis towards the future
- Off campus learning through community action
- Practical learning

It is the contention of this thesis that the social problems organizing principle is appropriate principle on which to base curricula for architecture because it acknowledges the contributions of other discipline towards the understanding of the built environment without recognizing every one of these disciplines as the only basis of the architecture discipline.

5.11. OBE

Although the general organizing principle is the social problems, other principles are incorporated to ensure than learners archive their outcomes. These are the outcomes as defined by OBE as required by SAQA and reclassified by Killen and Spady. Killen and Spady specify the three broad categories of outcomes that define the qualities of an individual who goes through OBE. They are as follows:

Life Roles

In this category the individual must be a:

- Responsible Self Manager
- Responsible Citizen
- Lifelong Learner who explores education and career opportunities
- Entrepreneur

Underlying Abilities

In this category the individuals must posses or exhibit the following:

- Problem/ Information- Based Decision Making

- Effective Teaming/Collaboration
- Effective Communicating

Ways of Thinking

In this category the individuals must possess or exhibit the following:

- Broad Systems Thinking
- Effective Learning Strategies/ Metacognition
- Cultural/ Aesthetic Sensitivity

But, Killen and Spady add that it is the four outcomes under the Life Roles category are the major defining elements in curriculum design. In their view once a student has been adjudged to have attained the four Outcomes under the Life Roles category, then it can be assumed that they can function effectively in carry out life – role functions: Personal affairs, Civic affairs, Learning affairs, Entrepreneurial affairs and additionally their Career affairs.

The curriculum suggested in this thesis, as seen below, is designed to enable the learners to acquire the Life Role outcomes.

5.12. OBE CURRICULUM MATRIX

The second part Chapter Two discussed why and how the South African government perceives the transformation of its society in general and specifically how education should address these changes through the implementation of OBE. Killen's (1996) method of applying OBE principles of planning to curricula was also discussed. In this final section, the study uses Killen's method to develop and propose outcomes that are expected of learner who has passed through any architecture programme. The outcomes are derived from the revised grouping of the SAQA critical and development outcomes as outlined by Killen and Spady in their OBE curriculum matrix. This matrix relates Life Roles (which includes Career, Entrepreneurial, Civic, Personal and Learners aspects) and the Enabling Abilities (Essential Knowledge, technical skill, Interpersonal skills, Management skills, Professionalism and Life Orientation). In order to develop the curriculum matrix of outcomes shown in Table 5.12.1 below a wide range of sources were used to make each outcome as clear as

possible. The survey of architects discussed in Chapter Three of this study also contributed to the definition of critical outcomes. The accreditation reports of each school of architect studied also provided insight into the critical outcomes. It must also be mentioned that the writer's own experience of architecture and educational practice had some influence in the way the critical outcomes have been defined. Therefore, any omissions and oversights are accepted as being the limitations of the author. However, it is the argument of this thesis that the proposed OBE curriculum matrix provides a comprehensive list of outcomes that define the bulk of the knowledge that is expected of an architecture graduate in the new South Africa. Further this matrix provides any architecture programme with a basis on which they could begin to address change in their curriculum.

Table 5.12-1 Proposed OBE Curriculum Design Matrix

Enabling Abilities		LIFE ROLES				
		Career	Entrepreneurial	Civic	Personal	Learner
Essential Knowledge	Specific General	To understand and use the History and Theory of Architecture: South Africa and the World.	To understand the basics of economics and business and to apply these in Architecture as a business venture and	To understand the civic processes in the local context and their interaction with the built environment.	To develop simple and complex language	To be equipped with the basic reading skills and analytical and critical thinking skills to apply knowledge to architecture
Technical Skills	Specific General	Design abilities and drawing skill to translate and interpret ideas in the Environment. Construction and Structures Computer Skills	Ability to identify potential areas of business involvement and develop business plans.	To understand and be able to apply the legal framework that guides the built environment	To be able speak, write and communicate Visually competently: Technical writing and presentation skills	To develop a range of methodology with which to address built environment issues.
Interpersonal Skills	Relations Communications	Collaboration with other professionals To be able to articulate one's role as a professional on multidisciplinary teams.	Making business contacts	To be proactive about issues involving the built environment	To be able communicate at varying levels of complexity: i.e. Professional and society level.	To learn new ways of interacting with society and other professionals
Management skills	Self People Things	To develop time Management skill. Manage the office and projects in the built environment	To be able to manage an office as a business venture.	To manage the professional role in the civil society	To develop the balance between ones professional and personal life	To learn skills of managing the built environment.

Professionalism	Core Values Principles of Professionalism	Learn the conduct of professional in the built environment.	Learn how to market one services and look for new areas of specialization	Learn to appreciate society's value systems	To learn to achieve balance between the professional's value system and that of others which may be different.	To learn apply oneself to achieve the highest level of professionalism
Life Orientation	Systems Thinking Cultural Sensitivity	To understand Architecture as a construct of the many cultures that constitute the South Africa society	To learn to view architecture not only a design in the built environment but also as a business ventures	To able to appreciate the intricacies of context and the built environment as defined by the concepts of sustainability	To develop the concept of tolerance of the multiple cultures that are characteristic of the built environment	To develop new ways of thinking and addressing the problems of the built environment. To develop critical thinking skills
Exit Level Outcomes		Total Career Performance	Total Entrepreneurial Performance	Total Civic Performance	Total Personal Performance	Total Learner Performance

5.13. ENABLING OUTCOMES IN ARCHITECTURAL EDUCATION

In this section the study proposes a structured set of learning experiences through which the learners can be helped to attain the critical Outcomes. The experiences are organised within the constraints of time that has been adopted to be the three plus two years structure of learning that is consistent with existing architecture learning programmes and legal definitions of professional complexity that is, candidate architectural technicians (three years training) and candidate architects (a total of five years training). It is the view of this thesis that the achievement of all outcomes described in Table 5.12.1 above during the five period of learning, to the highest level of competence, may not be likely in the prescribed five years of learning. Therefore, this study argues for the development of Continued Education (on the basis of outcomes outlined in Table 5.12.1) in architectural education as a way to heighten the competence level of architects after they leave architecture schools. The schools functions will be to introduce most of the basic concepts underlying each outcome but the learner will in future through their own learning initiative, through Continued Education, seek to acquire those outcomes that will equip them to be the competent professional that the new South Africa requires.

5.14. OVERALL STRUCTURE

In the model proposed in this thesis the duration of the architecture programmes is the same as the existing programmes that have the three years plus two years structure. Determination of the length of programmes has been deemed to be outside the scope of this study. This proposal differs in structure from existing curricula structures in South Africa because it vitiates the need to have a year-out learning between the first and second degree. The learning that a student is requested to acquire in the year-out, has in this proposed model, been purposely designed to be acquired during the normal years of study. The learner will have the third quarter of each year of learning, in which to acquire the desired knowledge (that previously was intended to be learnt during the year-out) as prescribed by the lecturers in the university. In the third quarter lecturers will have opportunity to see how learners apply their knowledge in a practical context. It is the argument of this thesis that such a system will ensure greater control of the knowledge that the learners acquired unlike the lassie-faire year-out that most learners experience under the existing structures. This system also allows the learners to be exposed to a wide variety of

architectural aspects in society than simply international travel and the architects office that are the easiest options for students of architecture in South Africa.

5.15. MODULAR CYCLICAL APPROACH TO THE COURSE STRUCTURE

In this proposed model the curriculum structure provides a framework that enables learners to integrate learning between courses-modules and the design studios by giving learners time to engage in reflective learning. This modular cyclical approach reconciles course effort with course credit and time. Design studio time requirements are acknowledged by reducing the number of courses taken at the same time as design. Effort in design is recognized by the increased course credits attached to design studio. It must be mentioned that this proposal has not suggested a method of distribution of credits. However, this study accepts the recommendation of CAA (1997:14), that the design studio should constitute at least half the learning time (and hence credits) in any year of learning. This structure also allows related, introductory academic courses to be taught before design studio. It diffuses the ever-present tension between the “support” courses and design studio that is characteristic of contemporary architecture programmes.

Table 5.15-1 Split Semester Schedule of Activities for knowledge based leaning architecture

Duration	8 weeks	1 week	8 weeks	1 week
Module Distribution	6 academic courses	All written Exams completed	Design Studio+ 1 Academic Course	Design Studio Exam + written Exams completed
Cyclical Activity	Theory, Technology, History	Exams	Related design project	Exams

In the first eight weeks, as shown in Table 5.15-1 above learners take 6 academic courses to introduce them to them to architecture issues: history, theory, context and technology. The lectures and exams for the academic courses are finished in the ninth week of the semester. In the second quarter of the semester is dedicated to design studio whose main design is linked to the themes introduced in the first session. Students take one extra course module during the studio session. Because of the reduced time learners can devote more time to the studio course than is

traditionally the case. Split session also allows lecturers to undertake team teaching, with academic lecturers helping learners during the design session and studio lectures providing input of the theoretical courses. The split session also enables learners to focus and integrate knowledge and to be able to understand the disparate parts of architecture. This is a model that allows learners to think about course-modules not as isolated knowledge areas but as intrinsically linked courses whose linkages the learners are allowed to demonstrate in the design studio in its especially dedicated time. The semester structure described above facilitates and encourages learners to think about what they are learning.

5.16. COURSE LOAD

Cryslar (1995:215) comments, “ Instead of ‘top-down’ reforms we need to consider ways to achieve a selective jamming of the architectural education machinery”. Like other writers Cryslar notes that architecture education is fraught with stasis because the students and faculty are too busy, meeting deadlines, to contemplate the way they learn or teach. Time needs for be deliberately allocated to allow both learners and lecturers to think about what they are learning and how they could improve on it in a systematic manner.

Load

One of the first things to do is to determine how much the load for architecture students should take and this must be related to similar programmes in universities. The accreditation boards have always expressed concern about the overload that learners experience in architecture and the disproportional credit weighting that modules times carry relative to time. Brady (1996) proposes a modular structure that reduces the number of courses taken at the same time as the design studio.

In the proposed curriculum in this study, the semester structure is divided into two. The first eight weeks learner will study the core subjects that are necessary for the understanding studio. In the second part students will mostly be involved in he studio programmes with at most threes subject from supporting faculties.

5.17. CONTENT

Course-module- load is restricted to six modules per semester. This proposal takes cognizance of the fact that it is not only time for other modules versus time for design studio that is the problem in architectural education, but also the timing of modules so that they are presented to learners early enough for them to synthesize and integrate

the knowledge from the “support “modules in the design studio. In the current programmes this integration is little achieved as revealed by the accreditation boards. In this study it is proposed that content of each year shall be guided by an overall theme as indicated in the Table 5.17-1 below.

Table 5.17-1 Themes to Guide architectural learning

First year	Cross cultural - learning
Second year	Service learning Public, housing
Third Year	Work based-learning Entrepreneurial Skills
Fourth	Management and Specialized
Fifth Year	Project

5.18. ENABLING OUTCOMES AND LEARNING EXPERIENCES.

This section describes the enabling outcomes that are designed to help learners achieve the critical outcomes describe in Table 5.12-1 above. The experiences have been designed on the basis of the social problems principle that helps to refine further the choice of curriculum content. This, it must be acknowledged is a deliberate stance taken in this study because of author’s conviction of the position of architecture in the South African context and world. It therefore means that with the same critical outcomes in Table 5.12.1, any school of architecture can develop an entirely different curriculum depending on what they see is the need of their learners. The overall Critical Outcomes remain the prime objectives that learners should acquire.

To simplify what is a complex process, each year of learning has been assigned an overall theme, which is derived from the critical outcomes discussed above. Each theme is then divided into course modules, which are the requisite knowledge that every learner must acquire in order to carry out the tasks and assignments to demonstrate that knowledge. The demonstration of knowledge is designed to occur in the Design Studio, which is the location in which knowledge can be applied in an integrated manner to the tasks. The course-modules have been clustered around the theme chosen for each year. The structure in which the knowledge in delivered to the learners has been described above as the modular cyclical approach
Each year’s curriculum content and learning process is described in detail below.

5.19. RECOMMENED CURRICULUM

5.19.1 First Year

Theme. Cross-Cultural Studies

This year is designed to enable the learners to explore a subculture within South Africa with a view to understanding it's diverse cultural milieu. The learners are encourage to observe and analyse a culture other than their own, after which the can then reexamine their own sub-culture to gain appreciation of the differences within the country. The aim in this year is to help learners to develop the concept of cultural synthesis: that learners engage with a cultural grouping, not as experts of the built environment but as, as co-learner with a particular people of their environment. The year is organized so that the learners in the first semester gain understanding of theoretical aspects of society. Seminars are used to prepare the learners for their experience. In the first quarter of the second semester goes to researching the particular society as part of the experiential learning. This may involve living among a particular sub-culture. In the last quarter of the semester the learners in teams, to foster collaboration, will produce designs for built environment problems observed in that particular sub-culture.

Design

In this year design is introduced to enable the learner to integrate a sub-cultures' norms and social organization processes with its aesthetic expression. This process should enable the learners to appreciate the many sources of aesthetic influence in sub-cultures on which the designer or architect may draw on in society. The link between art, architecture and cultural context is explored which must include sustainability awareness as the foundation of architectural education

History and Theory

Provides learners with the basic understanding of formations of settlements so that they begin to appreciate the interaction of the environment and human beings philosophies. The emphasis is for the learners to make connections and interrelations between facts and causes of events, building styles than the chronological order of events. The aim is to instill the concept of multicausal interpretation of the built environment as a way of enabling learners to develop

critical thinking skills. The learner is taught to perceive the built environment as events than objects. In this course no one culture's history should be dominant. Emphasis should be on how cultures interact to produce new meanings and settings.

Social, Political and Economic Studies.

The learner has to understand the social dynamics of a sub-culture and how these influence its economics and the resultant built environment. For this the learner should be able to analyse and identify sources and the nature of problems in a sub-culture. Politics and economics are seen as important aspects of the built environment that will enable learners to develop social, political, economic and cultural analysis the South African context.

Communication Skills and Computer Technology.

The learner has to be equipped with contemporary technology to record, analyses and be able to communicate ideas to the wider society. This includes knowledge of word processing, photography, drawing techniques and methods of presenting information to different societies. Learners will in the first year acquire verbal presentation, computer skills and technical report writing when they present the results of their experience to their tutors in school.

Community Participation

Learners of architecture are taught in the first semester how to conduct their study in society: how to engage with different sectors of society i.e. leadership as well as the common people. This module also lays the foundation for developing interpersonal relationship of a learner in society, commitment to relations, self-reliance, decision-making and respect for other culture's views.

Construction and Materials

It introduces the learners to the sources and types of materials for shaping the built environment. This course should be designed to explore materials and methods of construction with respect to various subcultures within the South African context.

5.19.2 Second Year

This year emphasizes the development of learners' responsibility to meet the needs of the public- the welfare of others especially in the urban context. It is a continuation of what the knowledge acquired in the first year, with emphasis on how the government delivers its services to its subjects but more importantly to inculcate a community service ethic in learners of architecture. Learners will be able to observe how the national policies for development are implemented. As part of the experiential learning, learners will be attached to government institutions and local authorities i.e. councils in the third quarter of the year so as to gain an appreciation of the government processes.

Processes of Development

To make learners aware of the various sectors of government through which government policy is translated into physical reality in the built environment. Through this process learners would be aware of the structures of government in which they could be involved if they want to influence policy on the built environment.

Housing

This course-module is designed to encourage development of the concern for one of the greatest of human problems, especially on the continent of Africa in learners of architecture by addressing the housing issue. Housing is taught so as to enlighten the learners to the social, financial, cultural and geographical determinants within the South African context.

History and Theory

This course is designed to enable learners acquire theoretical understanding of urbanization and architecture. The course addresses urban philosophies, urban problems their multicausal origins and the multidisciplinary approach to solutions. The urban ecological processes through which government and the people are engaged to shape the built environment are also explored.

Legal Studies I

The learners are introduced to the legal frameworks and documents that structure government activities in the built environment with a view to developing critical analysis of what the state perceives to be legal and how people react to these statutes- to address ethical issues that are abound in the context of society.

Communication Skills and Computer Technology.

This model teaches learners advanced computer technology programs like CAD and other methods of presentation.

Construction Technology and Structures.

This module is linked to understanding materials and methods for many types of housing and enable to learners to explore the influence of legislation on the production of housing for the masses and technology.

Design

In this year's design focus is on providing holistic housing solutions that address not only the aesthetic appeal, but also all the social, financial and political aspects. The product is a combination of design and written reports, which detail the other aspects of housing.

5.19.3 Third Year

This year is designed to enable the learner to appreciate role of the professional in the built environment. Part of this knowledge is designed to come from the experiential learning in the office of the practicing professional in the third quarter of the year. It also aims to give the learners a chance to explore and test the knowledge gained in the first two years against the practice of architecture by the professional. With that learners can then begin to make informed decisions about their careers and the direction they would like to forge their careers.

Design

In the third year design studio is based on the work of the professional- understanding design from the theoretical, technological and scientific perspective. Design here is integrated with construction and science and the learner may relate it to design problems identified in the first and second year of their experiential learning.

Construction and Structures

The learners are required to prepare complete working details of the design solutions showing high level of understanding the complex construction assembly processes and scientific structural stability.

Legal Studies II

This course introduces the learners to the statutes that govern the operations of the professional architects in the built environment and also legal contracts that the professional enters into with other related professional in the built environment business in order for the learner to understand the bureaucratic process that affect design.

Sustainability and Science

This course aims to engender the concept of responsible actions of the professional in the build environment, towards future generations. This course requires that the learners be critical and aware of the effect of their design decisions on the global context.

Drawing Skills and Computer Technology.

To develop complex drawing and computer skills to represent the design and construction solutions in this year by use of contemporary computer programs.

Management and Business

This course is designed to enable learners to appreciate the business aspects of architecture. It is meant give learners the basic understanding of how to become self-employers and to be able to draw up clear strategic plans as to how they would want their businesses to progress.

Research techniques and Methodologies

Introduces the learners to the basic scientific methods of understanding and tackling problems in a systematic and disciplined manner. These methods can be applied to any situation that requires scientific and technical understanding.

5.19.4 Fourth Year Specialized

In this year the learners are introduced to advanced research techniques and methods that will inform the learner in their choice of area of specialization. Learners can choose from an array of fields, their specific area of interest. In experiential learning each learner shall be attached to their specific area of interest, which may be in any field of learning.

Design

Its design studio consists of two integral parts. The first is the group work project, which is done in conjunction with other learners in the built environment planners, building economists, quantity surveyors environmentalists etc. The second part involves the production of a design or report of the learners own research topic according to their field of interest.

Collaboration and interdisciplinarity

The course introduces the learners on how to conduct themselves and how to exert their influence among fellow learners (of related professions) in an ethical manner.

Research Techniques and Methodologies

This course provides the learner with scientific tools with which to gather information and direct their research into understanding design problems that may wish to explore. This course is also designed to enable learners to be able to teach themselves by being able to logically structure argument about identified problems in a professional and technical manner.

Specialization and Electives

The learners would have to select a field in which they would like to major in. Additionally the learners can select at least 3 electives in the fourth and fifth year which would be drawn from a list of knowledge areas that are not comprehensively taught in architecture but are areas that increasingly affect the design profession operations in the built environment. These may be:

- Advanced Architecture
- Interior Architecture

- Landscape Design
- Urban Design
- Advanced Housing
- Client relations
- Budget Management
- Marketing
- Sociology and Human Behaviour
- Accounting
- Management
- Project Management
- Facility Management
- Real Estate Development
- Multi-Cultural awareness
- Environmental awareness
- Community Participation Processes
- Conservation

5.19.5 Fifth Year Specialized

In this year the learners have the opportunity to explore a topic of their choice related to their field of specialization. They have to show critical understanding of the issues that are germane to their study. Learners are expected to produce a mini thesis, which may not be the individually presented traditional design project, but may illustrate the issues that the learners have explored in the form of a written document. This allows learners who may not necessarily want to pursue design at this level but may instead identify other aspects of architecture, which they would want to develop.

Design

The learner will explore their chosen topic in a manner that will reveal the complex, systematic, multicausal, approach and inter-disciplinary solution to their problem in the built environment. The problem may not necessarily require a building as a solution but depends on the focus of the interest that the learner may want to explore. Case study analysis and a report may be the means through which the product could be delivered.

Electives

The learners must select at least three electives relevant to their area of study from the list provided in the fourth year schedule.

Access Programmes

Access programmes to schools of architecture that were designed for people who were disadvantaged by the apartheid era have not been discussed in this proposal. This should not be perceived to imply that access programmes are not important or that after ten years of independence the all learners coming into university have the requisite level of competence to enter university studies. There is, increasingly, evidence that suggests the opposite – literacy levels of all learners in mathematics, science, reading and writing are falling. Schools should be encouraged to provide access programmes that address this issue. This places pressure on time for achieving the critical outcomes within the prescribed five-year period of training.

Learner Assessment.

Although learner assessment is outside the scope of this study, it should be mentioned that contemporary methods of assessing learners of architecture are inappropriate for assessing the proposed curriculum.

As with any learning system assessment is a way of determining what learners know and what they have learnt. In OBE the concept of demonstrating the achievement of the desired outcomes is fundamental. OBE requires that learners should be afforded the opportunity to demonstrate their achievements.

Since the principles on which the course-modules in the proposed models are organized emphasize connectedness of knowledge, assessment of learners shall consider multiple aspects of assignments. For architecture programmes it would mean the removal of tests and examinations in subjects that are deemed to be the support course-modules. For example learners would not be asked to sit for written exams in structural Engineering. They would have to demonstrate their learning in the application of structural principles in Design Studio because that is where the knowledge will be applied and understood. This has repercussions of how such subjects are going to be taught. It also entails that assessment should not be the sole responsibility of the lecturers or tutors. The proposed approach to learning requires that learners need to be made aware of the criteria to be used for assessment before hand, and that learners should be given multiple opportunities to demonstrate their learning. Four methods of assessment are suggested by Killen(1996:21) that can constitute learner evaluation in the proposed curriculum. They are as follows:

- Performance-based assessment
- Continuous assessment
- Self– Assessment
- Peer assessment

5.20. CONCLUSION

This chapter has demonstrated what an architecture programme that is broadly based on the Post-Modern philosophy of curriculum model while utilizing the Social Problems principle and OBE should exhibit in terms of outcomes, structure and content.

The Post-Modern philosophy is appropriate because it address the transitional characteristics of a transforming South Africa. The criticisms leveled at the Social

Problems approach to learning -which are in many ways similar to the OBE approach- that it is inclined towards the future, that it tends to be oriented towards problem solving and it places less emphasis on knowledge for its sake are valid and are acknowledged. But the merit of such an approach is that it provides for the academics in the practice of architecture education, in the process of transformation, new areas of knowledge, patterns of relationships, new methods of teaching and assessing learners and research possibilities which will enrich the understanding of architecture in the local context. Of specific importance is the definition of what should constitute the built environment of the new South Africa, which can only be achieved through the interrogation of its context by a critical architecture curriculum enabled by the postmodern curriculum philosophy, the OBE and the social problems principles of organization. This chapter has defined critical determinants of an architectural curriculum that should define the basis upon which new programmes in architecture developed in the context of South Africa. It has also shown that because of the complexity of the problems that the context defines, there is no single pedagogical philosophy that can address these changes. It requires drawing influence from multiple sources.

Therefore the proposition that a curriculum model can be formulated that effectively accommodates the needs of a changing South Africa in the educational programmes for architects is substantiated

The discussion and suggested curriculum outlined in this chapter supports proposition Four, that through appropriate careful choice of principles, a curriculum model can be formulated which effectively accommodates the needs of a changing South Africa in the educational programmes for architects.

CHAPTER 6 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1. OVERVIEW OF CHAPTER

This chapter begins with a review of the salient points of all the chapters in the study. Then the unique contributions of the study to the understanding of architectural curriculum process are outlined. The opportunities for further research brought about as a result of this study are subsequently outlined. The chapter ends with a listing of the shortcomings of the study.

6.2. REVIEW OF PRECEDING CHAPTERS

6.2.1 Chapter 1

The main problem of this research is:

The development of a curriculum model for the education of architects within the needs of a changing South Africa.

In the first chapter the main problem of developing of a curriculum model for the education of architects within the needs of a changing South Africa was outlined. These changes were necessitated by the first democratic elections in held 1994 that signaled the end of the apartheid era for South Africa, and the beginning of the definition of a new era that would represent the aspirations of all people.

It was also noted that South African schools of architecture, like most African architectural schools adopted their educational systems from either their European or North American models, which are specific to their context.

Transforming the South African society in the eyes of the government meant introducing OBE education as the main philosophy to direct learning in institutions of learning. Access to universities for all meant that most of the schools and departments in these institutions were for the first time teaching a multicultural body of learners. Constitution, content and delivery of knowledge would have to be reorganized in order to achieve the wider democratic ideals, which are in the main linked to attainment of social, political and economic justice. The curriculum or curriculum process is understood in terms of both the distribution of power and the principle of social control and reproduction.

Education of architects being an integral part of the process of change has to find ways of adapting to and interpreting the new society. This calls for a critical examination of its history, curricula- content, structure and duration of learning process- and practice of architecture as a profession.

The choice of the learning philosophies reveals whose interests a particular curriculum is designed to serve. The architecture profession has been viewed to serve the interests of an elite population. The education process of architects has been designed to replicate this relationship. As the South African society has moved towards an egalitarian society the need to make architecture relevant to all in society is emphasised. This study proposes a principle for organizing curricula that will respond to the need of a wider sector of society

It was also noted that new computer technology was creating new possibilities for architects in both education practice of architecture.

This thesis sought to develop an in-depth understanding of the factors necessary for the development of an architecture curriculum that will be accommodating of the dynamic, social, economic, cultural and technological changes in the South African society and ultimately to suggest a architectural curriculum model that can be used to achieve the desired transformation of the built environment and the South African society as a whole.

6.2.2 Chapter 2

Sub- Problem 1

To review and categorize the current curriculum models as used in the South African schools of Architecture.

Proposition: All current curricula in the South African schools of architecture have some identifiable curriculum model

The second chapter began with a discussion of the definitions of curriculum and the many ways in which it can be interpreted. Associated meanings as well as the philosophical underpinnings and types of curricula are also outlined. A systematic approach to curriculum change as tool for analyzing and creating new curricular arrangements is outlined. The curricula of architecture programmes in South African Universities were analyzed and categorized using Conrad's systematic approach to curriculum and the requirements specified by the NBS 12 as dictated by OBE and SAQA regulations.

The study revealed the predominance of discipline-based knowledge- the traditional knowledge- as the main organizing principle that informs the curriculum design process of education for architects. This has been inherited from their traditional models of architectural education based on the twentieth century Bauhaus Movement and nineteenth century Beaux Arts models of architectural education through the British colonial education systems. The second principle of organizing curriculum is based on the competence model that the South African Government has instituted through the SAQA ACT and regulations. The analysis of curricula of schools of architecture in this study reveals that the second principle has only been partially implemented by schools of architecture since many of its characteristics are not identifiable in their present curricula.

This study established that all schools of architecture examined in this study reflect the predominance of the modernist type of curriculum that is simplistic in nature.

The location of learning in all architecture programmes is still within location the university for learners. Experiential learning is only done as far as the design studios can allow. Although most schools recommend year-out for its learners, they do not have systems in place to follow up learners' progress or to establish the kind of experience learners may be getting. Faculty designs the programmes in all the five schools of architecture. Learners' participation in curriculum design cannot be established even though it is reported that they are offered the opportunity help design their programmes. Flexibility is restricted to electives whose effectiveness according to accreditation reports may be compromised because of the lack of time to engage to greater depth in a topic. Content in all programmes is wide but it also underlines the focus of architectural education of training for predominantly practice of architecture.

Accreditation bodies are evidently the main enforcers of change in South African architectural education. In terms of curricula in all the five schools of architecture in South Africa, accreditation bodies concerns can be summarized as follows:

- There are problems with integration of knowledge particularly between core architectural course—modules and the support modules offered by other departments as well as between the design studio and other core modules i.e. construction. Compartmentalization of knowledge is prevalent.
- Synchronizing methods of teaching support modules with methods of teaching design.

- There are problems with maintaining studio culture in most schools in the light of security but more importantly with increased computer use learners are less likely to use the studio as it was in the past.
- Utilization of computer technology especially as design tools has been limited and is strongly advised.
- Housing as an important area of study with architecture is not receiving adequate emphasis.
- Pressures on architectural staff to be involved in research have led to tension in maintaining the traditional methods of teaching design. One to one contact with learners is increasingly difficult to achieve.
- Most schools seem to have attained relevance of curricula to regional context.
- Language and enrolment of black learners in architecture programmes were critical to transformation in schools and practice.
- Developing analytical and critical thinking as well writing in learners.
- Learners' course modules load and overload and its implications for design and the learning process as a whole.
- The disparity in allocation of credits between design and support modules because of time spent of design.

Five areas that emerge from study in which schools of architecture could act in order to provide education that prepares its graduates to positively address changes in the South African society are as follows:

- Firstly, it is evident that content in architecture schools' curricula has continued its strong emphasis on the traditional core course modules as the majority respondents indicate. This means that schools of architecture continue to teach what they have always taught even though the need for teaching other knowledge has been increasing over the years. This indicates a strong insular tendency inherent in architecture schools.

- Secondly, there is lack of conviction within the architectural profession with regards to addressing issues of democracy, politics and gender issues. This position is perhaps the reason why architects feel marginalized when it comes to addressing issues of poverty in society. There is an apparent gap in architecture knowledge of how they ought to interact with the totality of society.
- Thirdly, the technological changes in the world are indeed changing teaching and learning of architecture. The response of schools has been to be passive recipients of this knowledge than to be leading and finding new ways in which architecture can be taught and creating new professions in which architects can find jobs.
- Fourthly, it is evident that the changes proposed by South African government through SAQA have been responded to by school in a manner that continues to sustain the traditional modes of learning and therefore the manner in which the profession engages with society. Schools of architecture's responses to curricula change continue to be dominated by the demands of the profession through accreditation system. Therefore it cannot be said that schools of architecture produce new knowledge, which is traditional the function of universities.

The finding of this study is that schools of architecture predominantly produce graduates for practice. Society has in the meantime evolved and is demanding different types of graduates which schools are unable to produce because, fundamentally, schools have not changed their teaching and learning systems and worse still, schools are receptors of new knowledge- they are not the creators of new knowledge that will see the architectural profession increase its influence in society by diversifying its role. If the architectural profession is to achieve more relevance in society, schools of architecture should be the places where the search for new areas of influence should be initiated. The way the next generation of architects are

educated is going to be through curricula that engages with the South African society's contemporary issues.

6.2.3 Chapter 3

Sub- Problem 2

To determine distinctive cultural issues of the South African society that architectural education and its profession must accommodate and reflect.

PROPOSITION

A comprehensive understanding of the society is essential to ensure a built environment that represents all cultural groups.

The chapter begun by defining the cultural context within which the architects operate in society. Culture in this chapter was tackled in two phases. The first phase discussed the broader cultural issues that affect society directly and which determine the type of curricula to reproduce society. The second phase was to understand the cultural practices that were used in schools of architecture to produce architects. It was argued that issues that are pertinent to the developmental and multicultural context of South Africa are raised with a view to defining the unique characteristics and qualities that architects should possess in such a context. The type or models of education that are required to produce architects who can work within the changing South African context is then discussed. Lastly, in the second part, the views of practicing architects from a questionnaire survey are discussed in order to establish the nature of their educational experience that students undergo in schools of architecture and the culture it fosters as well as experience in practice and how it relates to education for architects.

The dissenting views in architectural education see it as failing, if it equips students only with the skill to solve task-oriented problems. In an increasingly complex world architectural education should equip students with intellectual skills for them to integrate problem solving with other fields. Liberal education that gives the students economic, political, social and cultural context, is suggested to be the basis on which architecture curriculum should be designed.

The Chapter has revealed the nature of education for architects and how it reproduces its profession and its relationships to society. It is clear from the discussion above that a universally applied curriculum to learning of architecture creates problems for its graduates and society. Adapting curricula to local needs is perceived to produce more successful architecture and architects. The most important revelations from study of literature on curriculum context and the results of the survey of architects revealed the following:

- The dominance of the Eurocentric approach to the learning and teaching of architecture is a prevalent feature of architecture programmes
- Architects in developing countries are perceived to be part of the elite or at least possess knowledge that best serves the elite in society.
- The dominance of the teacher or lecturers in learning of architecture should cease.
- It is difficult for architects in developing countries to contribute effectively to local community development because of their training that emphasizes western ideals which have little scope for contextual social needs.
- There is a need to emphasize African uniqueness to the global context.
- Social architecture with concern for the public and community welfare needs to be embraced by schools of architecture.
- There is a need for a controversial curricula in architecture than the safer non-controversial conservative curricula.
- Curriculum models evolve out of specific relations in society that are appropriate and make them readily applicable to their societies of origin.
- Schools of architecture tend to focus on producing graduates for practice who can solve task-oriented problems than rather than engage in intellectual understanding of relations between architects and other professions in the built environment
- Architecture programmes equip graduates with skills for solving task-oriented problems but not intellectual skills, which are necessary in an increasingly

complex world. Architectural education should equip students with skills for them to integrate problem solving with other fields.

- The learning process should help the learner to develop an enquiring and critical mind, a sense of good judgment and the capacity to act in a rational manner.
- there is a common core of knowledge in architecture which is the same for all cultures
- the common core of knowledge shared by all students must be shaped by the needs and circumstances of the African context.
- It is desired that the modern graduate be a potential job-creators than job seekers and the skills to ensure this attitude, though important, are not enshrined in the learning system.
- There is shift towards making higher education development based
- Linear curriculum structures do place limitations in the learning experience for architecture programmes. Cyclical approaches to curriculum are proposed to allow the development of sustainable architecture programmes.
- Integration of academic and studio work for architecture programmes is problematic.
- Student overload and time conflicts are a common feature of most architecture programmes and this prevents all involved in architecture in thinking critically about how education for architects and practice can evolve.
- Schools of architecture in South Africa do perform well in delivery of core architectural knowledge to the graduates.
- Only Written Communication seems to have been a problem of all the core aspects of architectural knowledge
- Architecture schools do not train their graduates in business skills.
- Marketing skills are less adequately taught in architecture schools. This limits their abilities to market their services effectively or create new opportunities

- Architects' training in office management is mostly inadequate.
- Most architects are not well trained in dealing with complex corporate client relations.
- The business aspects of architecture practice are not adequately covered in schools.
- Architects receive very little knowledge of competing professions like project management, interior design landscape etc.
- Schools of architecture were doing a good job of imparting environmental knowledge but were failing in providing learning of multicultural issues in their curriculum.
- Schools of architecture do not adequately impart knowledge that enhances the understanding of the multicultural context in which they operate.
- Architects rarely recognise the multicultural aspects of the South African society
- Schools of architecture do not foster the learning of the political context in which architects operate.
- Establishing inclusion in architecture schools was partially successful.
- The majority of architects believed that their former schools of architecture afforded them a favourable disposition to develop a wide range of skills.
- Schools of architecture had performed the function of enhancing meaning reasonably successfully
- Self-assessment and multiple ways of representing knowledge were skills that most architects felt they had learnt in architecture school.
- Achieving outcomes at various levels was less successfully achieved.
- Schools of architecture less successfully achieved connecting assessment to personal frames of reference and values.
- More experienced and older architects thought gender issues should be given priority by schools of architecture.

- Architects are unsure about whether racial diversity should be made a priority in schools of architecture. There is a perception among practicing architects that the changes are being addressed in schools but they should not be made priority.
- Most architects realize the global nature of architectural practice but think architects schools do adequately prepare them to practice at that scale.
- Most architects perceive themselves to be ill prepared in their education to deal with the problems of the low-income majority.
- Educational practice appears not to foster the development of teamwork skills in their learners
- Architecture programmes do not help learner to understand their economic context
- Architects view their profession as reflecting the needs of the markets than general needs of society.
- Architects admit that they face stiff competition for work from other professionals when aspects of delivery of projects on time and within budgets.
- Architects agreed that broadening of the core knowledge of architecture and broader understanding of the built environment was necessary to consolidate the architects' position in the business of the environment
- Architects agreed that they should be taught is project management
- Architects do not believe that the problems of the low-income majority are outside their profession
- Most architects believed that the scope of work for architects had increased as a result of use of computers
- Architects realize the importance of other courses, but are unwilling to reduce the time spent on design studio in school of architecture.

- Architects value design studio more than other courses even though they do acknowledge the importance of devoting more time on these courses in architecture.
- Architects place high value on the Crit system as a method of learning.
- Architects are of the view that the lecturers in the design studio did not dominate students.
- Older architects are of the view that computers were introduced in practice because of demand for CAD drawings by clients, facilities managers and building owners. Younger architects had mostly used computers because they had started using them in school of architecture.
- Architectural firms only employ people familiar with CAD.
- Architects believe that computers will fundamentally change the way architecture is taught.
- Majority of architects had no training in CAD and Computerization from their schools of architecture.

The chapter concluded that a comprehensive understanding of the society is essential to ensure a built environment that represents all cultural groups.

6.2.4 Chapter 4

Sub- Problem 3

Current educational curricula do not address all the needs of a changing South Africa in terms of architectural practice and education.

Proposition: There are a scale of needs of a changing South Africa from global through to local scales which are not addressed in the curricula in schools of architecture in South Africa

This chapter outlined major legislative framework that the South African government has enacted to guide transformation in architectural education and profession. The second part outlined in more detail the nature of problems that the legislation

addresses and using examples from other studies in South Africa raised issues that have arisen in the transitional phases of transformation in higher institutions of learning

The three prominent legislatures, discussed in this chapter that were passed and which have implications for the schools of architecture and the architectural profession are as follows:

- No. 43 of 2000: The Council for the Built Environment Act, 2000
- No. 44 of 2000: The Architectural Professions Act, 2000
- No. 58 of 1995: South African Qualifications Authority Act, 1995.

This chapter has showed that the curriculum process in higher education had evolved into a complex entity that required educators to acquire more knowledge than they possess if change that would benefit the whole of the South African society was to be attained. The study also showed that understanding the new curriculum process was important, because, if faculty in schools of architecture failed to appreciate it, it would lead to resistance to the ideals of OBE as had been shown to happen in some universities. The debate on OBE has also affirmed the need for future graduates to possess skills that will prepare them for a changing working environment, which is no longer as static as the traditional disciplinary environment. The implication for curriculum were that students would have to acquire other skills than the traditional specific disciplinary knowledge. These demands for other skills are also raising suggestions that some knowledge will have to be given less emphasis for new ones in education for architects. There is also the realization that the nature of the student has changed over time. These institutions of higher learning need to offer students a variety of ways of acquiring their qualification. Of specific importance in South Africa is access to learning by prospective students who have not the basic academic entry requirements but who would like to study in higher education. The questions of RPL and Academic Development (the bridging courses) had become more critical in education for architects.

The above discussion showed the range of needs that have to be addressed in architecture schools and curricula. Therefore the proposition that there are a scale of needs of a changing South Africa from global through to local scales which are not addressed in the curricula in schools of architecture in South Africa is supported.

6.2.5 Chapter 5

Sub- Problem 4

For the education of architects what curriculum model may effectively address the needs of a changing South Africa.

Proposition 4

A curriculum model can be formulated which effectively accommodates the needs of a changing South Africa in the educational programmes for architects.

This chapter outlines the nature and philosophical concepts that would begin to address the problems of South African architecture curriculum. Through synthesis of the architects' survey responses and other issues identified in the preceding chapters, philosophical concepts that ought to underlie architecture programmes of the future are proposed. The postmodern curriculum philosophy is used to address the needs of a changing South Africa. Within this overall philosophy are the concepts of critical thinking, critical pedagogy, universities' missions, and sustainability, which help to articulate the proposed curriculum for change in architectural education and practice. The concept of sustainable curriculum is important in the context of articulation of qualifications between different schools. It is the thesis of this study that new curricula should be organised using the social problems and OBE principles because, collectively, they address most of the problems that are unique to South Africa. The chapter discusses the use of experiential learning in the structure of the architecture programmes for learners and tutors that signals the shift from the traditional transmission model of learning to one of collective construction of learning by both the lecturers and students.

By using experiential learning the students would have attained Kolb's four-stage cycle of learning (Conrad. 1978:126), which are as follows:

- First Concrete experience
- Observations and reflections
- Integration of concepts and generalizations into theory to frame experience
- Testing of these observations in new situations.

This system of organizing a curriculum has also the added advantage of freeing the lecturers from teaching in the third quarter of the year so that they can engage in research activities some of which may actually arise from these activities.

This chapter argues that organizing a curriculum on the social problems principle is premised on the perception that, without resolution of society's problems, individuals

will never develop to their fullest if social ills remain unresolved. The social problems organizing principle ensures that architectural education is a function of society. In the proposed curriculum model the concern for social responsibility is paramount as well as the need to integrate knowledge to context.

In this chapter, the study uses Killen's method to develop and propose outcomes that are expected of learners who had passed through any architecture programme. The outcomes are derived from the revised grouping of the SAQA critical and development outcomes as outlined by Killen and Spady in their OBE curriculum matrix. This matrix relates Life Roles (which includes Career, Entrepreneurial, Civic, Personal and Learners aspects) and the Enabling Abilities (Essential Knowledge, Technical skill, Interpersonal skills, Management skills, Professionalism and Life Orientation).

A modular cyclical approach that reconciles course effort with course credit and time is proposed as a model the curriculum structure. Such a structure provides a framework that enables learners to integrate learning between courses-modules and the design studios by giving learners time to engage in reflective learning. A detailed curriculum model that utilizes the principles discussed above was outlined in this chapter.

This chapter has defined critical determinants of an architectural curriculum that should define the basis upon which new programmes in architecture developed in the context of South Africa. It has also shown that because of the complexity of the problems that the context defines, there is no single pedagogical philosophy that can address these changes. It requires drawing influence from multiple sources.

Therefore the proposition that a curriculum model can be formulated that effectively accommodates the needs of a changing South Africa in the educational programmes for architects is substantiated

6.3. UNIQUE CONTRIBUTION OF THE STUDY AND EXPANSION OF THE BODY OF KNOWLEDGE

Chapter 1

In chapter one this study expands the body of knowledge by raising pertinent questions about architecture curricula in the context of a society in transition in South Africa due to both local and global dynamics. The critical point of departure revealed by this study is the understanding of curriculum to be more than simply a discipline-

based construct, but that is also a politically driven process. The study sought to expand the body of knowledge in architecture by developing a curriculum model for the education of architects within the needs of a changing South Africa.

Chapter 2

Chapter two expands the body of knowledge by using a systematic approach to curriculum change, adopted from liberal studies, as tool to analyze and create new curricular arrangements. The curricula of architecture programmes in South African Universities are analyzed and categorized using Conrad's systematic approach to curriculum and the requirements of NBS 12 as dictated by OBE and SAQA ACT.

The study has shown that there are two predominant organizing principles of curricula in contemporary South African architecture schools. Firstly there is the discipline-based knowledge- the traditional knowledge- that informs the curriculum design process. The second principle of organizing curriculum is based on the competence model that the South African Government has instituted through the SAQA Act and regulations. The study has shown that the second principle has only been partially implemented since many of its characteristics are not identifiable in existing architecture curricula in South Africa. The study has shown that none of the schools architecture has explored the full potential of competence-based curricula i.e. other ways of teaching, learning and producing architectural knowledge as allowed by this organizing principle.

Chapter 3

This study has shown that contemporary issues influencing society and architectural practice seem to be only partially affecting teaching and learning of architecture. Although the present curriculum in schools of architecture provides a reasonably adequate level of traditional architectural knowledge it fails to prepare the graduates for the changes that affect the profession and its future.

The study has shown that architecture curriculum needs to respond to the developmental context that is characteristic of South African society.

The analysis of the survey has revealed the nature of architecture education experience for architects in South Africa. Further the survey has revealed issues that affect the practice of architecture that could be addressed by making changes in the way architects are taught in schools of architecture.

Chapter 4

In this chapter this study has defined a wide context within which curricula reform of architectural knowledge needs to take place. The most influential factors have been identified to include the following:

- Counteracting the former system
- Bridging the gap between education and training.
- Preparing South Africans for the 21st Century:

The chapter has added to the architecture curriculum debate, the curriculum process in higher education that has evolved into a complex entity that requires educators in architecture to acquire more knowledge than they possess if change that would benefit the whole of the South African society is to be achieved.

Chapter 5

This chapter has defined critical determinants of an architectural curriculum that should define the basis upon which new programmes in architecture could be developed in the context of South Africa.

This chapter has also added to the body of knowledge by outlining what an architecture programme based on the Social Problems principle and OBE should contain in terms of outcomes, structure, duration and content.

This study has also shown that because of the complexity of the problems that any societal context defines, there is no single pedagogical philosophy that can address these changes. It requires drawing influence from multiple sources.

6.4. OPPORTUNITIES FOR FURTHER RESEARCH.

The study of curricula raises a number issues that will need further research in order to ascertain the full impact of changes in society and to be able to institute meaningful curricula that could make learning of architecture more relevant. Important issues that will have to be addressed in architecture curriculum are as follows:

- There needs to be research into how the schools of architecture have responded to new legislation especially implementation of NQF requirements and OBE.

- There is need for further research into how Africanisation can better articulated in architecture curricula and programmes as dictated by the context and society.
- There is need for further research articulation of architecture programmes among schools of architecture.
- Studies also need to be conducted into the response of architecture schools to the changing working environment, prospective student profile, RPL and AD. These will help define and articulate schools of architecture's response to societal needs.
- Distance education in architecture needs to be explored as a possible option. Distance learning is not conceived as an option for learning in architectural institutions. Extensive research is required for it be a real option for learners of architecture especially in a time when more students are expected to fund their own studies by having to work and learn at the same time.
- Retraining of faculty in schools of architecture in curriculum processes is critical for the successful implementation of curriculum change. Failure to do so will further entrench traditional practices as has happened in some schools. Further training programmes that educational practitioners would ensure that they develop new ways of teaching architecture to respond to diverse society.
- There is need to research in the types of architecture programmes to allow for development of a variety of architectural programmes, which can give students greater choice of architectural programmes and portability of credits. This is particularly important in the light to South African governments policy of rationalizing resources.
- To determine the sustainability of learning programmes of architecture in South Africa is more poignant in the atmosphere of rationalization of resources by the South African government as evidenced by the merger of institutions and declaration of some Technikons as technical universities.

What should the response of architecture programmes be? What are the possibilities of collaboration to rationalize resources?

- There needs to be further study into the establishing what the ideal course loads for learners should be in schools of architecture. This is important because the response of architecture schools has been to add modules whenever new areas of knowledge arise. There is a need to also establish which knowledge areas for architects need to be discontinued as it becomes obsolete.
- There is a need to develop new ideas about how the design studio should evolve in the light new tensions, as revealed in some of the accreditation visit reports. It is evident that there is less time available for lecturers to consult with learners as they traditionally have, partly because the institutions demand that they become more academic by producing more accredited articles. Being practicing architects is no longer adequate in the universities.
- To determine the successes of the OBE in other educational programmes and to work out what can be adapted to architecture education programmes. While architecture programmes have been re-written, not much has been written about the way learners can be encouraged and empowered with new assessment methods based on OBE principles. Assessment continues in the traditional sense with symbols and percentages, and the credits distribution among course-modules having changed very little. Learners become empowered if they are active participants in the assessment
- To determine ways of rewarding and recognizing architecture faculty with interest socially oriented work.
- A study of the critical numbers of architects that are needed in the South African society to enable the sizes of architecture institutions to be planned accordingly, The impact on South Africa's economy of loosing close to fifty percent of its graduates in some schools of architecture employed in Western

countries should be investigated. The rate of returning graduates to the country must be established. Local employability of architecture graduates need to be established.

- To determine the kind of training that architectural education practitioners (lecturers) need so that they able to devise learning experiences programmes create new knowledge and a culture of questioning the curriculum and educational practices.
- To determine impact on the design studio and its mode of operation of reduced contact hours between learners and tutors, as tutors spend more time on research functions.
- To determine other knowledge apart from design knowledge that architects need to operate in a changing working context. Practicing architects admit that design knowledge is not enough to practice architecture. What other knowledge to contemporary architects need to acquire in order to exert wider influence on society.
- To determine the possibility of offering part-time architecture programmes in the light of learners needing to raise their own finances.
- To determine the possibility of offering distance– learning architecture programmes.
- To determine the extent of involvement of architects in housing and other problems of poverty which are of prime importance to the government. Architects are generally perceived to be acting on the part of the elite. They indicate, in this study, that they are ill equipped to handle the problems of the poor. This is important especially for South Africa, because problems of poverty are inevitably linked to the concept of democracy, which the whole society embraces. How and can architects contribute to eradication of poverty and other social ills. What knowledge is necessary for architects to contribute to attainment of equality and democracy?

- To determine how access to architectural education can be devised so as to have a sustained diverse learner population.
- To determine how gender and racial issues are being addressed in schools of architecture and how the profession is responding to these issues.

These research areas will begin to clarify and inform architectural education and practice of the role architecture ought to be playing in the built environment and society as a whole. These are not issues that should be glossed over but require critical engagement, assessments and purposely dedicated time from all interested parties, learners, academics, practicing architects, related professions, government and society as a whole.

6.5. SHORTCOMINGS OF THE STUDY

- because of the dearth of literature on South African and African architectural education issues there has been a reliance on articles from other parts of the world. The reliance of information mainly from the UK and USA has its problems in that though the issues may be the same they happen in political and social contexts that are inherently different from the development context of South Africa.
- The lack of survey of the learners and tutors' perceptions on changes in South Africa because change has affected them the most.
- Unwillingness and wanton delay on some significant parties to provide information vital to the progress of this study meant that certain issues could not be dealt with effectively.
- the questionnaire did not allow for respondents to give an indication of what they view as important for the future in terms of knowledge- Knowledge which they would schools to emphasize in future.
- The accreditation reports for architecture do not all have one standard format so it was difficult to compare information of an architecture school to another.

BIBLIOGRAPHY

- ABEL.C. 1995 Globalism and the Regional Response-Educational Foundations. Educating Architects. Academy Group.
- AHERENTEN, S and Groat, L.N. 1992. Rethinking Architectural Education: Patriarchal Conventions & Alternative Visions Form The Perspective of Women Faculty. *Journal of Architectural and Planning Research*. Volume 9:2. p. 95-110.
- AIAS. 2002. The Redesign of Studio Culture. AIAS A Studio culture Task Force. American Institute of Architecture Students.
- BERKLEY.R.M. 1984. The studio is where a professional architect learns to make judgments. *Architectural Record*: 10/1984. p. 104:105
- BETSKY A: Machine Dreams: June 1997.*Architecture*. p. 88-91
- BIZZELL: 2002: Blueprints in black and white. The built environment professions in South Africa- an outline history. Durban. Solo Collection.
- BRADY.D.A. 1996. The education of an architect: Continuity and Change. *Journal of Architectural Education*. Volume 50, no.1, p. 32-48.
- BRAWNE.M. 1995. Architectural Education: Educating Architects. Academy Group.
- BREIER, M.2001. Curriculum Restructuring in Higher Education in Post Apartheid South Africa. Education Policy Unit, University of Western Cape.
- BREMNER, L and Louw I. 2001: Engaging Difference. *SA Architect Journal*. Vol Nov/ Dec. p. 43 –48.
- BREMNER. L. 2003. Global Exchanges of Ideas. *Journal of South African Institute of Architects*. Johnnic. Cape Town.
- BROADBENT, G.1995. Architectural Education: Educating Architects. Academy Group.
- BROWN. R and Moreau. D. 2004: Finding your way in the dark. <http://www.lancs.ac.uk/platine/s-vpresentations/brownpaper.ttm>. 2004/04/15
- BUCHANAN P. (1989). What is wrong with architectural education? *Architectural Review*, 1109, July 1989, p. 24-26
- BULOS. M.A. and Teymur. N. 1993. Housing: Design, Research, Education. Aldershot: Avebury.
- CAA Report. 1997 Appendix A: Qualifications in Architecture Recommended for Recognition by CAA. Procedures and Criteria. London.
- CAUDILL. W.W. 1971. Architecture by Team. Van Nostrand Reinhold Company. London, Toronto, Melbourne.

- CELLIERS M: 2000 Ph.D. Thesis. An Academic Development Model for University and Technikon Students – Meeting the Demands of the 21st Century. University of Pretoria. Pretoria.
- CHENG-MAN LAU. D. 2001. Analyzing the Curriculum Development Process: three models. *Pedagogy, Culture and Society*. Volume 9, Number 1, p. 2944
- COLES. R. 1988 Black Architects: An Endangered Species,". *Progressive Architecture* .July 1988. p 9.
- CONRAD F.C. 1978. The Undergraduate Curriculum: A Guide to Innovation and Reform. Colorado Westview Press.
- CROSBIE J. 1995. Why Can't Johnny Size a Beam? *Progressive Architecture*. June 1995.
- CROSBIE. M.J. 1995. The Schools- How they're Failing the Profession and What we can do about it. *Progressive Architecture*. September 1995. p. 47- 96
- CRYSLER, G.C. 1995: Critical Pedagogy and Architectural Education. *Journal of Architectural Education*. Volume 48 /4, May 1995. p 208-217.
- CUFF. D. 1989. The Social Art of Design at the Office and the Academy. *The Journal of Architectural Planning and Research*. No. 6:3. p.186 –210
- CUFF. D. 1991: *Architecture- The Story of Practice*. Cambridge. MIT Press
- DANBY. 1983. Architectural Education in Africa and Middle East. *Architectural Education* 2. London. RIBA Magazines. p.15-93.
- DAVIS. R. 1993. Writing Multiculturalism into architecture Curricula. *Journal of Architectural Education*. Volume 47-1, p. 30-37.
- DE GRAFT- JOHNSON, A. Manley, S. and Greed, C. 2003. Why Do Women Leave Architecture. University of the West of England. RIBA publication.
- DEPARTMENT OF EDUCATION (1996) Education Green Paper. Higher Education Transformation. Government Printer, Pretoria.
- DEPARTMENT OF EDUCATION (1997) Education White Paper 3. A Programme for the Transformation of Higher Education. Notice 1196. Government Printer, Pretoria.
- DERRINGTON, P.A: 1981. Controlling the Quality of Professional Performance In Architecture. Ann Arbor, University Microfilms International.
- DUTTON.T.A.1991. Voices in Architectural Education: Cultural Politics and Pedagogy. New York. Bergin and Garvey.
- ELLIS. R and Cuff. D .1989. Architects' People. New York. Oxford University Press.
- FREIRE.P. 1993. Pedagogy of the Oppressed. Continuum Publishing Company. New York.

- FORSYTH. A, Lu. H and McGirr. 2000. Service Learning in Urban Context: Implications for Planning and Design Education. *Journal of Architectural and Planning Research*. Volume 17:3. p 237-259.
- GILHOME Ross.1983. "I want to grow Houses": a Latin American scenario. *Architectural Education* 2. p. 47-57. London. RIBA Magazines.
- GRANGE. I. L. 1989: Preparing for the Future: Addressing the Education of Black Architects in South Africa. *Architecture SA*. Institute of South African Architects.
- GROSS, M. D. 1994. Roles for Computing in Schools of Architecture and Planning. *Journal of Architectural Education* Volume 48 /1, September 1994, p. 56-63.
- GRUNDY S: Curriculum: Product or Praxis. The Falmer Press, 1987 London/ New York/ Philadelphia.
- GUTMAN R. 1988. Architectural Practice- *A Critical View*. Princeton Architectural Press. New York.
- HABRAKEN, J. N. The general from the local. *Architectural Education* 2. p. 7-14. London. RIBA Magazines.
- HALLEN, in Haber Noero De Beer, Mayet, Fagan, Liebenberg and Mikula. 1995. Hopes in Hell-Complexities and Contradictions. *Architectural Review*. 197/1177.p 46-49.
- HARGREAVES. A and Fink. D. 2004. The Seven Principles of Sustainable Leadership. Association for Supervision and Curriculum Development. .
- HOADLEY. U and Jansen. J. 2002. Curriculum: From Plans to Practice: Oxford. New York.
- HOWIESON. S. (2000: 161) in Nicol D. and Pilling. S. 2000. Changing Architectural Education: Towards a New Profession. E and F Spon. London and New York.
- KEESING-STYLES. L. 2003. The Relationship between Critical Pedagogy and Assessment in Teacher Education. *Radical Pedagogy*. ISSN: 1524-6345.
- KGAPHOLA R.M. .1999. Restructuring Higher Education in South Africa. A Case for Development Oriented Curriculum Structure. Foundation for Research and Development Pretoria.
- KILLEN .R. 1996. Outcomes Based Education: Some Issues To Consider in The South African Context. Paper Presented at the University of Pretoria, South Africa October 1996.
- KILLEN R and Spady. Using Critical Outcomes to Inform Curriculum planning in Higher Education in South Africa. *South African Journal of Higher Education* 13(2). p. 200-208.

- KOSTOF. S. 1977. *The Architect: Chapters in the History of the Profession*. New York. Oxford University Press Solna, Sweden: Stockholm International Peace Research Institute,.
- KRAAK, A. 2000, HRSC
- LAWRENCE A: 2000. Changing Architectural practice Paradigms and Their Implications for Professional Education. *Journal of Architectural and Planning Research*. Volume 179:3. p. 197-205.
- LAWTON.D.1983. *Curriculum Studies and Educational Planning*. Hodder and Stoughton. London.
- LEWIS. R.K. 1985. *Architect? A Candid Guide to the Profession*. Cambridge, Massachusetts, London, England. The MIT Press.
- LHA Management Consultants. 2001 Graduate Profiling Study of the School of the Built Environment. University of Pretoria.
- LUND Nil-Ole. 1993: *Educational Objectives in Architecture in Companion to Contemporary Architectural Thought* By Ben Farmer and Hentie Louw. Publisher Routledge. London and New York.
- LYNCH J.: 1983. *The Multicultural curriculum*. Batsford Academic and Educational. London.
- MAKGOBA. M.W. 2004. "Key Challenges for Curriculum Transformation. " Conference on Higher Education Curriculum and Society Relevance Quality and Development. April 2004. University of Pretoria.
- MAMA. A. 2004: Conference on Higher Education Curriculum and Society: Relevance, Quality and Development. 1-2 April 2004, Pretoria South Africa
- MANGANYI. C.N.1981: *Looking through the Keyhole*. Ravan Press. Johannesburg.
- MANLAY. S. and Claydon. J (2000:144) in Nicol D. and Pilling. S. 2000. *Changing Architectural Education: Towards a New Profession*. E and F Spon. London and New York.
- MARSH. C and Willis. G. 2003. 3RD Edition. *Curriculum: Alternative Approaches, Ongoing Issues*. Merrill Prentice Hall. New Jersey and Ohio.
- Mazrui. A. A.1986. *The Africans- A Triple Heritage*. Boston. Little Brown.
- MCLEAN, B.J.1982. *The Unwanted orphan: The Study of the Specific Gap between Contemporary Architectural Education and Practice*. University of Pennsylvania.
- MCLOUGHLIN and Oliver. 2000: *Designing Learning Environments for Cultural Inclusivity: A Case Study of Indigenous online learning at tertiary level*. *Australian Journal of Educational Technology*.

- MHLANE L and Mbhele S: 1992: Curriculum Development as a Strategic Issue in Meeting the Challenge of the Future South Africa.7th Conference of the South African Association for Academic Development. P. 344-364
- MILLS.G. 1993: Notes on Architectural education-Are Universities appropriate venues, for schools of architecture in a restructured South Africa? *Journal of the Institute of South Africa*. January/February 1993, p14-15.
- MILLINER. L. 2003. Studio Culture- Who needs it? Conference at Oxford. p. 17-18 December 2003. <http://www.cebe.1tsn.ac.uk/new/events/concrete/summary.html>.
- MITANG. L.D. 1999. Back to School. *Architectural Record*. 9/99,p. 112-120.
- MOLL. I. 2004. SAUVCA Curriculum Responsiveness Researcher Group. In parallel discussion sessions at Conference on Higher Education Curriculum and Society: Relevance, Quality and Development. 1-2 April 2004, Pretoria South Africa,
- MOORE, K. D: 2001: The Scientist, The Social Activist. The Practitioner and the Cleric: Pedagogical Exploration toward Pedagogy of Practice. *Journal of Architectural and Planning Research*. Volume 18:1. p 59-79.
- MOORE. R. 2004. Relevance, Quality and Capacity in Curriculum Restructuring in South Africa Higher Education. Conference on Higher Education Curriculum and Society: Relevance, Quality and Development. 1-2 April 2004, Pretoria South Africa
- MORGAN. M. H. 1960. Vitruvius: Ten Books on Architecture. Dover Publications. New York.
- MOTLOCH, J.L.1991. PhD Thesis: Delivery Models of Urbanisation in Emerging South Africa. University of Pretoria. p. 171- 180
- NABEEL. H and El Sherif. A. - 1996. Educating for Real-The Training of Professionals for Development Practice. Intermediate Technology Publications. London.
- NEPI, 1992: National Education Policy Investigation: curriculum. Oxford University Press. Cape Town.
- NGARA E. 1995. The African University and its Mission. Institute of Southern African Studies.
- NNAMDI .E. 1996. African Architecture: Evolution and Transformation. McGraw-Hill. New York.
- NORMAN.F. 2001. Towards a Paperless Studio. Architectural Research Centers Consortium. Spring Conference at Virginia Tech, April 2001, p 85-91.
- NOVITSKI B J. The Architecture of Cyberspace. 11/1997 *Architectural Record* .p.139-142
- PADJEN.E: Spinning Your Web Page: June 1997 *Architecture* . p 168-172.

- POTTER .N.1969. What is a Designer: Education and Practice. Studio Vista London/
Van Nostrand Reinhold New York.
- POWELL. R. J. 1989. The Blues Aesthetics: Black Culture and Modernism
(Washington, DC: Washington Project for the Arts, , p.19.
- POWERS .M. 2001. Applying Constructivist Pedagogy to Design Studio Education.
ARCC Spring Research Conference at Virginia tech. April 2001, p78-84.
- PRETORIUS F: 1998: Outcomes - Based Education in South Africa. Hodder and
Stoughton. Johannesburg.
- RAPOPORT A. 1976. The mutual Interaction of People and their Built Environment-A
Cross-Cultural Perspective. Mouton Publishers, The Hague
- RAPOPORT A. 1983: Architectural Education: There is an urgent need to reduce or
eliminate the dominance of the studio". *The Architects Journal*. October 16, 1983.
- RATELE. K. 2004. Curriculum responsiveness, access and efficiency In parallel
discussion sessions at Conference on Higher Education Curriculum and Society:
Relevance, Quality and Development. 1-2 April 2004, Pretoria South Africa,
- RIBA Review of the Architectural Education. 1999. Chaired by Sir Colin Stansfield
Smith.
- Rinehart. M. A: 2003. *Creating A Multidisciplinary
Architecture*.<http://home.worldcom.ch/~negenter/020bMultidiscipArchHTx1.html>.
- RUSSEL E and Cuff D: Architects' People 1989. Oxford University Press. New York
- SAUNDERS et al...(Peter G Rowe, Mack Scogin K. Michael hays, Carol Burns and
Roger Ferris): 1996: Reflections on The Architectural Profession in the Nineties.
Princeton Architectural Press. New York.
- SAQA (a). Third Draft. TITLE OF QUALIFICATION. Bachelor of Architectural
Studies: FIELD: NSB12 PHYSICAL PLANNING AND CONSTRUCTION. SUBFIELD:
PHYSICAL PLANNING, DESIGN AND MANAGEMENT
- SAQA (a) Third Draft. TITLE OF QUALIFICATION. Bachelor of Architecture: B
Arch/Master of Architecture (Professional): MArch (Prof).FIELD: NSB12 PHYSICAL
PLANNING AND CONSTRUCTION.SUBFIELD: PHYSICAL PLANNING, DESIGN
AND MANAGEMENT
- SCHON.D 1985. Architecture and the Higher learning. The design studio. RIBA
Publications limited.
- South African Council for Architectural Professions, Royal Institute of British
Architects, Commonwealth Association of Architects Accreditation Report of the Joint
Visiting board to the University of Cape Town, School of Architecture and Planning.
August 2001

South African Council for Architectural Professions, Royal Institute of British Architects, Commonwealth Association of Architects Accreditation Report of the Joint Visiting Board to the University of Orange Free State. Department of Architecture. 10-12 April 2000.

South African Council for Architectural Professions, Royal Institute of British Architects, Commonwealth Association of Architects Accreditation Report of the Joint Visiting Board to the University of Port Elizabeth, Department of Architecture. 10-12 April 2000.

SOUTH AFRICAN COUNCIL FOR THE ARCHITECTURAL PROFESSIONS, Royal Institute of British Architects, Commonwealth Association of Architects Accreditation Report of the Joint Visiting Board to the University of Pretoria, Department of Architecture. 1-3 September 2003 and 27 November 2003. Report Date 15 January 2004.

SOUTH AFRICAN COUNCIL FOR ARCHITECTURAL PROFESSIONS, Royal Institute of British Architects, Commonwealth Association of Architects Accreditation Report of the Joint Visiting Board to the University of Pretoria, Department of Architecture. 22-23 November 2001.

SOUTH AFRICAN COUNCIL FOR ARCHITECTURAL PROFESSIONS, Royal Institute of British Architects, Commonwealth Association of Architects Accreditation Report of the Joint Visiting Board to the University of Pretoria, Department of Architecture. 23-25 August 1999.

SOUTH AFRICAN COUNCIL FOR ARCHITECTURAL PROFESSIONS, Royal Institute of British Architects, Commonwealth Association of Architects Accreditation Report of the Joint Visiting Board to University of Witwatersrand School of Architecture and Planning. 26 November 2003.

SHANNON. K. 1999. Education Architects. *Archis*.No.1. 60 - 63

SPRECKLEMEYER, K.F, Domer, D.E and Carswell, J.W.1985. Volume 2: Measuring Curricula Orientation in Architectural Education: *Journal of Architecture and Planning*. No 2, p. 99-114.

STAMPS. A.E. 1994: Jungian Epistemological Balance: A Framework for Conceptualising Architectural Education 1994 November *Journal of Architectural Education*. Volume 48/2, p.105-112.

Sustainable Environment Report.1985.

STEVENS. G. 1997. Reflections of the Apostate CAD Teacher. *Journal of Architectural Education*. Volume 51/1, September 1997, p. 78-80

SYMES.M., Eley. J. and Seidel A. 1997. Architects and their practices: a changing profession. London. Butterworth.

- STARK. J. Lowther. M. A. and Hagerty B.M.K 1986. Responsive professional education: balancing outcomes and opportunities. Washington. ASHE.
- TEYMUR, Necdet.1983. Architectural Education in a divided world. Architectural Education 2. London. RIBA Magazines: 84-92.
- TEYMUR. N. 1992. Architectural Education: Issues in Educational Practice and Policy. London, Question Press.
- TEYMUR. N. 2001. Learning *from* Architectural Education. <http://cebe.cf.ac.uk/ae/pdf/teymur2.pdf>.
- TOWERS G. 1995. Building Democracy: Community Architecture in the Inner Cities. UCL Press. London. p. 182-197.
- UDUKU, N. 1995. Architecture and the Community- African Perspectives. *Architecture SA*. March/ April. p. 23-25.
- UNESCO (1983). Training of “barefoot” Architects, Social Sciences in Asia and the Pacific.
- United Nations.1994.World Social Situation in the 1990s.New York United Nations Publications. p. 103
- Validation Report of 1999. South African Council for Architects, Commonwealth Association of Architects and Royal Institute of British Architects.
- VAN LOGGERENBERG. A. 2000. Curriculum Principles in Action. Study Materials. University of Pretoria.
- VERNON. M.1997. Does CAD Boost Productivity? June. *Architecture*. p 160-162.
- WAKELY.P.I.1983. Architectural education in Latin America: concerns and conflicts. Architectural Education 2. p. 37-46. London. RIBA Magazines.
- WEILER, R: 2002 August: No limits to Knowledge, but Limits to Poverty: Towards a
- WOOLLEY.T. 1991. Why studio. *Architects Journal*. 20 March 1991.
- WLODKOWSKI.R.J. and Ginsberg M,B. 1995. Diversity and Motivation: Culturally Responsive Teaching. Jossey- Bass Inc., Publishers. California.
- XUE. C. Q.L and Chen X. 2003. Volume 20:4. Chinese Architects and Their Practices- An Analysis of a Questionnaire Analysis. *Journal of Architectural and Planning Research*. Volume 20:4, Winter 2003 291-305

APPENDICES

APPENDIX A: QUESTIONNAIRE DOCUMENT

Official use only V1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1-4
----------------------	--------------------------	--------------------------	--------------------------	--------------------------	-----

Questionnaire for Architectural Education
PART I

The following are questions relating to your personal information.
Please indicate the institution(s) at which you studied for your architecture qualification.

University of Pretoria	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
University of Witwatersrand	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pretoria Technikon	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Witwatersrand Technikon	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Specify if others	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Highest Qualification i.e. B Arch, M Arch etc.	<input type="text"/>			
Year of graduation	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Number of years you have worked since your graduation	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Age	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Sex: Female	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Male	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CAD Experience in Years	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Official use only			
V2	<input type="text"/>	<input type="text"/>	5-6
V3	<input type="text"/>	<input type="text"/>	7-8
V4	<input type="text"/>	<input type="text"/>	9-12
V5	<input type="text"/>	<input type="text"/>	13-14
V8	<input type="text"/>	<input type="text"/>	15-16
V7	<input type="text"/>	<input type="text"/>	17
V8	<input type="text"/>	<input type="text"/>	18-19

PART II

Please indicate, your answer by marking the appropriate box with an X, how well you were taught the topic/courses listed below during your period of study.

	No training	Poor	Adequate	Excellent	Official use only
1 Brief Preparation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	V9 <input type="checkbox"/> 20

2	Schematic design				
3	History of Architecture				
3	Building Technology				
5	Construction Drawings				
6	Structural / Mechanical design				

V10	<input type="checkbox"/>	21
V11	<input type="checkbox"/>	22
V12	<input type="checkbox"/>	23
V13	<input type="checkbox"/>	24
V14	<input type="checkbox"/>	25

		No training	Poor	Adequate	Excellent
7	Specifications and Codes				
8	Urban Design/Planning				
9	Computer-Aided Design				
10	Computerization				
11	Written Communication				
12	Graphic Communication				
13	Oral Communication/Presentation				
14	Client relations				
15	Office Management				
16	Budget Management				
17	Marketing				
18	Sociology and Human Behaviour				
19	Accounting				
20	Management				
21	Project Management				
22	Facility Management				
23	Interior Design				
24	Real Estate Development				
25	Housing				
26	Landscape Design				
27	Production				
28	Research				
29	Multi-Cultural awareness				
30	Environmental awareness				

Official use only		
V15	<input type="checkbox"/>	26
V16	<input type="checkbox"/>	27
V17	<input type="checkbox"/>	28
V18	<input type="checkbox"/>	29
V19	<input type="checkbox"/>	30
V20	<input type="checkbox"/>	31
V21	<input type="checkbox"/>	32
V22	<input type="checkbox"/>	33
V23	<input type="checkbox"/>	34
V24	<input type="checkbox"/>	35
V25	<input type="checkbox"/>	36
V26	<input type="checkbox"/>	37
V27	<input type="checkbox"/>	38
V28	<input type="checkbox"/>	39
V29	<input type="checkbox"/>	40
V30	<input type="checkbox"/>	41
V31	<input type="checkbox"/>	42
V32	<input type="checkbox"/>	43
V33	<input type="checkbox"/>	44
V34	<input type="checkbox"/>	45
V35	<input type="checkbox"/>	46
V36	<input type="checkbox"/>	47
V37	<input type="checkbox"/>	48
V38	<input type="checkbox"/>	49

PART III

The following are questions regarding your views on architectural education.

Please state whether you agree or disagree with the statements given below. Indicate your answer by marking **X** in the appropriate box.

		Strongly Disagree	Disagree	Don't Know	Agree	Strongly Agree	Official use only	
31	The school(s) I attended did a good job preparing me for the realities of business and practice.	1	2	3	4	5	V39	50
32	The architecture school(s) I attended did a good job providing me with a well-rounded liberal education.	1	2	3	4	5	V40	51
33	The Crit system of evaluating design work in schools of architecture is abusive, undermines teamwork, and should be reconsidered.	1	2	3	4	5	V41	52
34	In my school of architecture interaction between lecturers and students in the studio was characterized by lecturer domination of the students.	1	2	3	4	5	V42	53
35	More time should be spent on other subjects, such as technical and business aspects of the profession than the design studio.	1	2	3	4	5	V43	54
36	To encourage schools to place greater emphasis on practical and technical knowledge, students should be permitted to take at least part of their Professional Exams immediately after graduation.	1	2	3	4	5	V44	55
37	Schools of architecture are overemphasizing Computer- Aided Design at the expense of drawing skills.	1	2	3	4	5	V45	56
38	Schools of architecture should make gender diversity a top priority in their faculties.	1	2	3	4	5	V46	57
39	Schools of architecture should make racial diversity a top priority in their faculties.	1	2	3	4	5	V47	58
40	Architectural education teaches students to value design on drawing boards more than communication with the rest of the world.	1	2	3	4	5	V48	59
41	My architectural education taught me how to adapt and apply knowledge and skills to issues of my local context.	1	2	3	4	5	V49	60
42	All staff at accredited schools of architecture should be registered architects.	1	2	3	4	5	V50	61
43	What is taught in architecture school differs from what takes place in architectural practice.	1	2	3	4	5	V51	62
44	My school of architecture prepared me well for the interdisciplinary nature of practice.	1	2	3	4	5	V52	63

45	Design projects in my architecture school were client-specific rather than subject or need -specific criteria that reflect a holistic approach to design.	1	2	3	4	5	V53	64
46	As a student of architecture I was taught to do my own thing- that originality is a prerequisite for good architecture.	1	2	3	4	5	V54	65

		Strongly Disagree	Disagree	Don't Know	Agree	Strongly Agree	Official only	use
47	The split between formal lecture courses and the conceptual skills of the studio is responsible for the lack of understanding of design.	1	2	3	4	5	V55	V66
48	Studio component of architectural training must be given less emphasis and consequently have a reduced loading in the program.	1	2	3	4	5	V56	67
49	Students need to have more time for research in the architecture programme.	1	2	3	4	5	V57	68
50	My architectural education enabled me to apply knowledge and skills to issues of global context.	1	2	3	4	5	V58	69
51	Teamwork should be emphasized in architecture schools in recognition of the complexity of relations of those involved in the design process.	1	2	3	4	5	V59	70
52	The lecturers in my architecture school emphasized the importance of teamwork in the design process.	1	2	3	4	5	V60	71
53	Architecture students should understand the economic context in which they exist before they learn architectural design.	1	2	3	4	5	V61	72
54	My architectural education helped me understand the economic context in which I existed.						V62	73
55	Students should understand the cultural context in which they exist before they learn architectural design.	1	2	3	4	5	V63	74
56	My architectural education helped be understand the multicultural context in which I existed.	1	2	3	4	5	V64	75
57	Students should understand the political context in which they exist before they learn architectural design.	1	2	3	4	5	V65	76
58	My architectural education helped me understand the political context in which I existed.	1	2	3	4	5	V66	77
59	All lecturers in schools of architecture should be proficient in CAD.	1	2	3	4	5	V67	78
60	The coursework in my school of architecture emphasized the human	1	2	3	4	5	V68	79

		Strongly Disagree	Disagree	Don't Know	Agree	Strongly Agree	Official only	use
76	The program in my school allowed for attainment of outcomes at different points in time.	1	2	3	4	5	V83	94
77	The programme in my school allowed for multiple ways of representing knowledge and skills.	1	2	3	4	5	V84	95
78	The programme in my school allowed me to develop self-assessment as part of the overall assessment process.	1	2	3	4	5	V85	96
80	The architecture programmes in schools adequately prepares students for architectural practice in a global world.	1	2	3	4	5	V86	97
81	Theories of design described by studio lecturers differed from how the lecturers conducted themselves in the design studio.	1	2	3	4	5	V87	98
82	Learning of design was productive only to the extent that the students understood and accepted what the studio masters taught.	1	2	3	4	5	V88	99
83	Lecturers and students rarely questioned the assumptions and values underlying their theories in use in the studio.	1	2	3	4	5	V89	100
84	Lectures rarely helped students recognize the ideas and theories embedded in their studio work.	1	2	3	4	5	V90	101
85	Professionals aim to improve society's quality of life but they are ill prepared in their education to deal with the problems of the low-income majority.	1	2	3	4	5	V91	102
86	Contemporary architecture is an interdisciplinary practice.	1	2	3	4	5	V92	103
87	Architects can no longer rely only on their design skill to get work.	1	2	3	4	5	V93	104
88	Much of the theory acquired in my architecture school has been discarded early on in my professional life.	1	2	3	4	5	V94	105
89	Architects face competition from other professionals regarding delivery of projects on time and within budget.	1	2	3	4	5	V95	106
90	Architects should be taught project management skills.	1	2	3	4	5	V96	107

Strongly Disagree	Disagree	Don't Know	Agree	Strongly Agree	Official only	use
-------------------	----------	------------	-------	----------------	---------------	-----

91	To consolidate their position architects need to broaden the core areas of knowledge and understanding of the built environment.	1	2	3	4	5	V97	108
92	The problems of low-income majority are outside the architecture profession and disciplinary responsibilities.	1	2	3	4	5	V98	109
93	Contemporary practice requires that the architect be part of a group of professionals working in consultation with each other.	1	2	3	4	5	V99	110
94	Architects should acquire new knowledge to help deal with the problems of a diverse society of South Africa.	1	2	3	4	5	V100	111
95	Most practicing architects seldom recognize the multicultural aspects of society.	1	2	3	4	5	V101	112
96	Architectural practice in South Africa reflects the changes the global context.	1	2	3	4	5	V102	113
97	The architecture profession in South Africa reflects the needs of the market rather than society.	1	2	3	4	5	V103	114
98	Practicing architects and firms need to be committed to supporting schools of architecture through volunteer efforts and mentoring.	1	2	3	4	5	V104	115
99	Practicing architects disassociate themselves from the economic issues of South Africa.	1	2	3	4	5	V105	116
100	Practicing architects disassociate themselves from the political issues of South Africa.	1	2	3	4	5	V106	117
101	Practicing architects disassociate themselves from the social issues of South Africa.	1	2	3	4	5	V107	118
102	Architectural practice must respond to the complex urban and global issues by acknowledging contributions of other cultures and perspectives.	1	2	3	4	5	V108	119
103	Architectural practice becoming a global practice.	1	2	3	4	5	V109	120

Part IV

The following statements are about your experience and your beliefs with computer use in architecture school and practice. Please indicate by marking your answer with an **X** whether you agree or disagree with the statements given below.

104 I received computer training in my architecture school.

Yes No

105	The computer training I received in my architecture school was adequate.
106	The reasons why computers were introduced in my practice are because clients, facilities managers and building owners require CAD drawings of our designs.
107	The CAD operators in our office are all qualified architects.
108	Sharing of files with other members of the building team results in fewer errors and better-worked out details.
109	The scope of work for the architect has expanded as a result of using computers.
110	Keeping track of time taken for a project done using computers, is a difficult process in the practice office.
111	Because of computers the traditional relationship between the principal architect and the junior, to check the evolution of design, is no longer possible as the screens are normally filled with detail.
112	I received adequate Computer Aided Design (CAD) training in my architecture school.
113	Architectural firms now only hire new staff familiar with CAD.
114	Computers will change the way design is taught in schools of architecture.

Strongly Disagree	Disagree	Don't Know	Agree	Strongly Agree
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5
1	2	3	4	5

Official use only	V110	<input type="checkbox"/>	121
	V111	<input type="checkbox"/>	122
	V112	<input type="checkbox"/>	123
	V113	<input type="checkbox"/>	124
	V114	<input type="checkbox"/>	125
	V115	<input type="checkbox"/>	126
	V116	<input type="checkbox"/>	127
	V117	<input type="checkbox"/>	128
	V118	<input type="checkbox"/>	129
	V119	<input type="checkbox"/>	130
	V120	<input type="checkbox"/>	131

Thank you for your time spent answering this questionnaire. Kindly write your e-mail address in the space given if you would like to receive a copy of the results of our study:

APPENDIX B: LETTER TO ARCHITECTS

Finzi Saidi,
Department of Architecture,
University of Pretoria,
0002.

Friday, November 23, 2001

Dear Architect,

Architectural practice has been experiencing rapid change in response to the changes in the South African society, since the early 1990s. The response of curricula for schools of architecture to these changes in the practice of architecture has not been ascertained. The Department of Architecture at the University of Pretoria recognizes the need to gauge the performance and relevance of the existing architecture curricula. It seeks to understand new areas of knowledge which may influence existing curricula in order to enhance the quality of education it offers. To do this we are requesting for your assistance.

Change has also been taking place within the University. Since last year, the Architecture, Landscape Architecture and Interior Design programmes have been merged into one department- resulting in highly integrated curricula. All programmes now have a five-year duration for professional qualification.

We feel that these changes will be incomplete without considering the experience of practicing architects. As practicing architects that graduated at time when change in society was most paramount you have had valuable experience in dealing with the practical changes- from which we hope to learn. It is our belief that these issues have tested your knowledge in many ways. We would especially like to know your candid, honest opinion of how well your training in architecture prepared you for the changing practice environment, by answering our questionnaire that will take not more than fifteen minutes of your time. We believe your response will be making a great contribution to the teaching of architecture and shaping of curriculum for the future. We would like to offer you the results of our study if you so wish. Please note that the questionnaire should be printed in Landscape orientation if need be.

Kindly e-mail your response to saidi@postino.up.ac.za

Your willingness to assist us in this regard is greatly appreciated.

Very sincerely yours,

Finzi Saidi

APPENDIX C INTERVIEW WITH PROFESSOR LINDSAY BREMNER

Monday September 08, 2003

What makes the Wits School of Architecture different from other Schools of Architecture in South Africa?

This school has developed programme of architecture that is very strong in the teaching of architecture theory. It is a course that teaches its students critical and intellectual tools necessary for critical analysis of the environment. This school has its strength in that. This school is not good at teaching and developing the student's technical abilities and skills.

What is the mission of this school and how does it tie with the mission of the university.

Part of the mission of the University is community service. This department is one of the foremost supporters of Wits University's Community Service Scheme Unit. We have designed in our second and third year programme, a Design-Build course, quarter-modules in which the students are involved in design and actual production of furniture for crèches and refurbishment of building. Through these courses we expose our students to society's problems and it is hoped that through this method of students can see the relevance of architecture in society.

Are you involved in collaboration and rationalization with any institutions in region.

Yes, we had an agreement with Wits Technikon to teach our first year programme and also for them to take over the teaching of the technical courses of our undergraduate programme. We had intended for them to take over the teaching of the whole of the first year degree programme. Wits University approved this but because of the impending merger of Wits Technikon and RAU all this has been put on hold.

I would appear that Prof. Bremner supports strategic alliances with Technikons rationalizing the programmes.

Do you think indigenous knowledge is important for architecture in South Africa?

Yes our programmes are well attuned for producing graduates who can work very well as international practitioners and perhaps not for the local South African culture. We need to research as to how indigenous knowledge can be used to create contemporary African architecture.

What we have in terms of IK at Wits Architecture School is that IK is included in the history course. We cannot say that IK is integrated in the design course where it would be more meaningful because it can be then applied to the students design problems. IK is not used to challenge the dominant Eurocentric values of architecture

(Henderson calls its Inclusive or perspective approach which acknowledges multicultural realities of the minorities but does not challenge the dominant culture [in McLoughlin and Oliver:2000:4]).

How do you think the architecture schools should be changing in terms of curriculum?

I think the way we are teaching architecture now is not rational. There are 13 programmes all producing the same product (architecture graduate). I think at Wits what I would like to see is we should only be teaching at post graduate level- at highly critical, theoretical and intellectual level that attempts to seek answers, in part about what African architecture is and should become.

Any other thoughts about architectural education?

I think the architecture schools in South Africa do a good job producing students for the first World environments which is why many of its' graduates are able to work in the Europe and America with little adjustments. But, architectural Education fails to produce architects that seriously address and question the issues of African environment with respect to architecture and the cities. There is little engagement with what the problems of the African cities etc. That is what I think architecture schools in universities should be teaching.

APPENDIX D INTERVIEW WITH PROFESSOR ORA JOUBERT

Interview with Professor Ora Joubert – HOD Architecture at University of the Free State. **Wednesday 6th August 2003**

The Discussion was based on a number of questions regarding architectural education in South Africa. The discussion was less structured but meant to establish the general trend and philosophy of the architecture department at Free State University

Question

What makes this department different from the others in South Africa.

Answer

Its location in region that characterized by small towns (doorpies) and farms sets the stage for low key architecture, much less in scale than the problems of the heavily populated urban centres of Gauteng and Western Cape. Therefore its architecture seeks create an architecture that has small town or rural architecture as it specialty.

Question.

What kind of curriculum should driven architecture in South Africa?

Answer.

First I believe that there are universal principles of design which every architect ought to master. These principles are mainly those that have been developed well in the Western civilization. These generally teach one how to design. They also have been well documented through the written records. However I believe that it is important for students of architecture to learn African History to be more aware of the continent in which they operate and further to study how pre-colonial and colonial history has shaped South Africa as a country. These describe the context in which architecture is practiced and informs one what is possible.

Question.

How does the changing students' demographics affect your department?

Answer.

We want more students of colour- the black students. At the moment we can't get black students not because of people's perception of this University being a formerly white only Afrikaans speaking university, but rather because of stiff competition from better placed professions like engineering, accountancy, medicine. Potential students of architecture in with the minimum requirements of science and mathematics opt to study these other programs because they are better paying and also these professions are well established. There is not a shortage of role models with regard to medicine, engineering and accountancy within their communities while there are

still very few architects of colour to have the same attraction to the architecture profession as there is for the medicine, engineering and accountancy.

APPENDIX E: LETTER TO SCHOOLS REQUESTING FOR CURRICULUM INFORMATION

C/o Professor S le Roux
Department of Architecture, Landscape and Interior Design
University of Pretoria
0002 Pretoria.
School of Architecture
University of Natal

Dear HOD

RE: REQUEST FOR CURRICULUM INFORMATION.

I am currently conducting a doctoral research at the University of Pretoria. My area of study is architectural education and how it is evolving in changing South Africa.

Part of my research requires that I examine the current curriculum content of professional architectural programs. I am kindly requesting that you forward to me, at your earliest convenience the following details:

- a) The objectives of your professional degree program(s).
The curriculum content and structure used to achieve the above objectives, giving the course descriptions and duration.
Your most recent document(s) submitted to accreditation board i.e. C.A.A
The recommendations from accreditation board following point (c).

If there is any other information which you may deem important for my study, kindly do forward it to me with the requested information.

Thanking you for your help.

Yours faithfully,

APPENDIX F: CLASSIFICATIONS OF QUESTIONS IN THE QUESTIONNAIRE

PART II

These questions address the body of knowledge that constitute architectural education. However because of differences in every school's philosophy of education some subjects may be emphasized more than others and some not be offered at all. The respondents answers thus can be used to judge the orientation of a particular architecture school may have been at a given point depending on the subjects the taught.

Questions V9 to V38	4 is the preferred answer
---------------------	---------------------------

Part III

What Question hopes to measure	Official number	Preferred answer
Preparedness for business and practice	V39	1 Strongly disagree
Architecture school's philosophy regarding liberal education	V40	5
How much architects value the importance of Crit as a method of teaching and evaluating design	V 41	1
Lecturers' influence and domination of their students	V 42, V88, V89, V90	1
Time spent on studio versus others subjects	V43	1
Measure whether architecture schools should teach more practical subjects than theoretical subjects	V44	1
Whether school were emphasizing computer skill than usual drawing skills	V45	1
Gender issues should emphasized	V46	5
Racial issues should be emphasized	V47	5
Whether students place more importance on their drawings than other aspects of design	V48	1
Measure whether knowledge gained was applied to local environment.	V 49-5, V91-1	****
The necessity of teachers of architecture to	V50	1

be able to practice		
The difference between architecture school and practice is extensive.	V51	1
Architecture was part of an interdisciplinary team in design.	V52, V 59 ,V60, V92	5

Projects in school did not reflect a holistic approach to addressing the needs of the world.	V53	1
Emphasis in architecture school was on individual thought to produce good design	V54	5
Design and other course are not well integrated.	V55	1
Whether architects feel the studio time should be reduced.	V56	1
Whether there is adequate research time for architecture students	V57	1
Architecture educational skills received were applicable in the global world- Global relevance	V58, V86, V 109	5
What architects feel about teamwork and what architecture school should do about it.	V52, V59, V 60,	5
Whether architecture education made students aware of their economic environment	V61, V62	5
Architecture education made architects aware of their cultural context.	V63, V64	5
Awareness of political context before architecture school	V65	5
Architecture school made architects understand their political context.	V66	5
Necessity for CAD proficiency for lecturers.	V67	1

The following questions were used to indicate whether the architectural educational system enabled democratic ideals to be realized by its students. This realization is essential for the establishment and maintenance of culturally responsive teaching in architecture schools.

1. Establish Inclusion What do we need to do to feel respected and connected to one another?	V68-5, V69-5, V70-5, V71-1, V 72-5, V 73-5, V 74-5	*****
2. Developing Attitude How can we use relevance and choice to create a favorable disposition toward learning?	V 75, V76, V77, V78	5

3. Enhancing Meaning What are active ways to increase the complexity of what we are learning so that it matters to us and contributes to a pluralistic democracy?	V79, V 80, V 81	5
4. Engendering Competence How can we create an understanding that we are becoming effective in learning?	V 82, V 83, V 84, V 85	5

Whether conduct in studio differed to the theories espoused in lectures	V87	1
Measure changes in the profession	V93-5, V94-1, V95-5, V96-5, V97-5, V99-5	5*****
Architects perception of the kind problems they could to be involved with in their profession.	V98, V100, V101, V103, V 105 , V106, V107, 108	
Relationship between schools of architecture and the profession	V104	5

Part IV

These are questions relating to computer training in school and their use in practice.

Received computer training at architecture school	V110	1
Whether architects received training and whether it was adequate	V111	5
Reasons for establishing CAD in practice office	V112	5
CAD operators' qualifications	V 113, V119,	5
Whether CAD improves work efficiency	V114, V116	5
Whether CAD is changing and creating new relationships in the office?	V 117	5
Whether CAD has generated new work for architects	V115	5
Architects received adequate CAD training in architecture school	V 118	5
Computers and its impact on architecture teaching	V 120	1