GENDER ISSUES IN THE LEARNING OF ARCHITECTURE IN PRIVATE UNIVERSITIES IN OGUN STATE, NIGERIA

BY

FULANI, OMOYENI ADEREWA
(MATRICULATION NUMBER: CUGP05153)

JULY, 2017

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A THESIS SUBMITTED TO THE DEPARTMENT OF ARCHITECTURE, COVENANT UNIVERSITY, OTA, OGUN STATE, NIGERIA

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF DOCTOR OF PHILOSOPHY (Ph.D) DEGREE IN ARCHITECTURE, IN THE DEPARTMENT OF ARCHITECTURE, COLLEGE OF SCIENCE AND TECHNOLOGY, COVENANT UNIVERSITY, OTA

JULY, 2017

ACCEPTANCE

This is to attest that this thesis is accepted in partial fulfilment of the requirements for the award of **Doctor of Philosophy in Architecture** in The Department of **Architecture**, College of Science and Technology, Covenant University, Ota.

Philip John Ainwokhai ----------

(Secretary, School of Postgraduate Studies) **Signature & Date**

Professor Samuel Wara ----------

(Dean, School of Postgraduate Studies) **Signature & Date**

DECLARATION

I, **FULANI, OMOYENI ADEREWA (CUGP05153)**, declare that this research was carried out entirely by me under the supervision of Professor. (Mrs.) O.O. Amole (Main Supervisor) of the Department of Architecture, Obafemi Awolowo University, Ile-Ife, Osun State and Professor A. B. Adeboye (Co-Supervisor) of the Department of Architecture, Covenant University, Canaan Land, Ota, Ogun State. I attest that no portion of the thesis has been submitted in support of an application for another degree or qualification in this or any other University or institution of learning. All sources of scholarly information referred to in this thesis were duly acknowledged.

FULANI, OMOYENI ADEREWA _____

(Signature & Date)

CERTIFICATION

This thesis entitled **GENDER ISSUES IN THE LEARNING OF ARCHITECTURE IN PRIVATE UNIVERSITIES IN OGUN STATE, NIGERIA,** carried out by FULANI, OMOYENI ADEREWA under my supervision, meets the regulations governing the award of the degree of Doctor of Philosophy (PhD) in Architecture of the Covenant University, Ota, Ogun State, Nigeria. I certify that it has not been submitted in part or full for the award of the degree of PhD or any other degree in this or any other University, and is approved for its contribution to knowledge and literary presentation.

Professor (Mrs) O. O Amole	----------
(Main Supervisor)	(Signature & Date)
Professor A. B. Adeboye	----------
(Co-Supervisor)	(Signature & Date)
Dr. O. A. Alagbe	----------
(Head of Department)	(Signature & Date)
Professor J. A. Fadamiro	----------
(External Examiner)	(Signature & Date)
Professor S. T. Wara	----------
(Dean, School of Postgraduate Studies)	(Signature & Date)

DEDICATION

This work is dedicated to my Almighty Father who has proven beyond reasonable doubt that He loves me with an Everlasting Love and to the memory of my late father, Professor Ademola Mobain-re Obayemi (1943-1998), for giving me wings to fly.

ACKNOWLEDGEMENTS

I give all my unreserved thanks to God Almighty, the one who girds me with strength and makes my way perfect for helping me throughout this journey of my research work towards obtaining my Ph.D and supplying all I needed to make this a reality even when all hope seemed lost. In doing a work of this magnitude that has spanned a long period of time it is also necessary to acknowledge the help of a number of people who God used mightily, to ensure that this thesis was completed.

My immense gratitude goes to the Chancellor of Covenant University, Dr. D. O. Oyedepo, for providing the leadership, sponsorship, unique opportunity and platform upon which this work was done. I am indeed very grateful. I am also grateful to the management of the University for all privileges accorded to me throughout the course of this study.

I would like to acknowledge the very significant contribution of my supervisor Professor (Mrs) O. O. Amole for supervising this Ph.D work and providing the needed guidance. I appreciate her motherly love, unending understanding, kindness and support. Together with her husband Professor S. A. Amole, from the very moment the idea of this work was conceived till the conclusion, they continually mentored and encouraged me to complete the work despite all odds. I also wish to acknowledge the contribution of my co-supervisor, Professor A. B. Adeboye, for his supervision and able assistance at all stages of this work.

My sincere appreciation also goes to Professor S. A. Oloyede and Professor O. Fagbenle for their tireless push and encouragement, which sped up the wrapping up of this work. I would also like to acknowledge the support given by all the members of staff of the Department of Architecture, Covenant University, Ota, for their numerous contributions to the completion of this work. They were always ready to encourage and critique the work. Particularly, I appreciate Professor E. A. Adeyemi for his fatherly support and scholarly contributions. I also acknowledge the great assistance of Dr. E. O. Ibem, Dr. O. A. Alagbe (the immediate past and present Heads of the Department of Architecture respectively) and Dr. A. A. Oluwatayo (the departmental Post-Graduate Co-ordinator) for their never relenting efforts in seeing to it that this work was completed. I wish to specially appreciate my brother and sisters from other

mothers – Dr. P. A. Aderonmu, Arc. F. Jegede, and Dr. B. Adewale for their ceaseless encouragement, prayers and enabling companionship. They were always there to lend practical helping hands. I wish to appreciate all the great architects in the department: Dr. O. Dare–Abel, Dr. P. Opoko, Dr. I. Ezema, Dr. O. Izobo-Martins, Dr. O. Ediae, Dr. D. Babalola, Arc. A.B. Sholanke, Dr. E. Ekhaese, Arc. M. Erebor, Arc. G. Alalade, Arc. A. Owoseni, Dr. E. Aduwo, Arc. O. Uwakonye, Arc. N. Olagunju and Arc. F. Adetoro. I say thank you to each one for your goodwill and various efforts and assistance towards the completion of this work. May The good Lord continue to lift you up and shine His face upon you individually and on us all as a department.

Also worthy of acknowledgement are those who helped in one way or the other to gather the needed data from different sources-Arc. Ebele, Arc. Ahmed Sani, Miss Funmi Sonola, and Arc. Taiye Alagbe. To Emeka Ezeaku for helping with data sorting and collation, and to Bade and Tomi Obayemi for excellent and unrivalled interview transcriptions, I say thank you. I also acknowledge the assistance of my cousin, Dr. Bayo Ijagbemi for being ever ready to provide me with access to the needed academic resources and the assistance of Gary Dainton of Learning Connections Resources ® who granted me free access to the use of their online resources and tests while collecting the needed data.

I wish to acknowledge the constant support of my siblings: Jide, Jumoke, Olorunfemi, David, Tunbi, Bade and Tomi throughout the course of this project. Your prayers, words of encouragement and support stand as a testimony of the love you have for me. I also acknowledge the contribution of my golden and dearest mother Mrs Felicia Biodun Oladepe Obayemi for her great devotion, love, prayers and tireless encouragement. God used her and my late father Professor Ademola Obayemi to sow the seeds of all I am in life. They sacrificially gave me good and quality education and the freedom to aspire high despite the limitations society thrusts at women.

Saving the best for the last, I want to give special accolade and unrivalled acknowledgement to my best friend and dear husband, Arc. Samuel Oluyemi Fulani. He was my backbone, emotionally, spiritually, financially and in many other ways while this work lasted. Indeed, he and our wonderful children Ifeoluwa, Oluwakemi, Oluwademilade, Ireayomitide and Oluwadamilare made great and immeasurable

sacrifices without which I might not have been able to complete this work. There were many days they had to bear with my absence and prepare meals all by themselves just to see to it that this work was completed. Honey, as we have laboured together, by the Special Grace of God we shall all enjoy the harvest together. May our children live to achieve even greater than we ever will. I love you all and will forever be indebted to you.

To all those mentioned and others, whose names, memory and space have not permitted me to mention, I wish to say that your contributions to this work are greatly appreciated. To you all, I say thank you from the bottom of my heart and pray that help will never be far from you when you need it most (Amen).

Thank you.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF PLATES

LIST OF APPENDICES

ABSTRACT

Prompted by previous findings of research on gender issues in different schools of architecture and based on the indicated lack of knowledge of the lives of women in developing nations, this thesis investigated gender issues in learning architecture. The in-depth study required for such a study prompted a study of students in Private universities in Ogun State, Nigeria. In this study, gender characteristics of the students, their learning patterns, experiences, performance and aspirations were investigated in relation to gender differences and inequalities. Employing a critical method of inquiry common to feminist works, quantitative and qualitative data were both collected from second to sixth year students in all the three private universities. Relevant data gathered through in-depth interviews, written perceptions of students and ethnographic observations carried out over a period of three academic sessions (2013/2014-2015/2016) were analysed using parametric and non-parametric tests and content analysis. Findings show that the student population structure in the departments sampled was skewed or tilted in favour of the males and androgynous. Also, there were gender and gender identity differences as well as inequalities in the learning patterns and schema of some schools indicating that most male and masculine students did not need to exert as much effort as the females or feminine while carrying out different types of learning tasks. Overall, the female students were generally found to attain significantly higher academic achievements except in the design studio. Finally, it was found that for most females, irrespective of their academic achievement, their career aspirations were greatly restricted by their gender and their more challenging learning experience. The main implication of the findings is that in Nigeria, despite social changes, gender still significantly influences the learning of architecture. Recommendations were that stakeholders in architectural education should take deliberate restructuring steps to ensure that the skewed gender composition in the higher ranks of mainstream architecture either in education or practice will not remain skewed in favour of the males with only the lower ranks at best attaining a tilted composition.

KEYWORDS: Architectural Education, Gender, Gender Identity, Gender Issues, Learning Experiences, Learning Patterns

CHAPTER ONE

INTRODUCTION

1.1. Background to the Study

It has been discovered from literature that a number of researchers (Anthony, 2002; Boyer & Mitgang, 1996; Groat & Ahrentzen, 1996; Niculae, 2012; Sara, 2002) had highlighted the paucity of women and persons of non-Caucasian races in the professional and academic ranks of architecture. Gender issues, differences and gendered practices had also been reported in several areas of architectural education (Ahrentzen & Groat, 1992; Ahrentzen & Anthony, 1993; Corroto, 1996; Datta, 2007; De Graft-Johnson, Manley & Greed, 2003; Demirbas & Demirkan, 2007, 2010; Groat & Ahrentzen, 1996, 1997). These issues among several others had been found to discourage many potential and talented females from enrolling into schools of architecture or to drop out if already enrolled in the course (De Graft-Johnson *et al*., 2003). Suggestions were also made that women could not cope with the rigours demanded by the study and practice of architecture and as such were not likely to attain outstanding achievements in the profession.

Contrary to this suggestion, however, it has been discovered that there were female architects who had made outstanding achievements in the profession such as Zaha Hadid and Kazuyo Sejima who were awarded the yearly prestigious Pritzker prize in architecture in 2004 and 2010 respectively. In 2007, Anna Henringer was also awarded another prestigious prize, rewarding excellence in architecture-the Aga Khan prize. In 2014, the Cable News Network (CNN) celebrated the achievements of a female Nigerian architect, Jumoke Adenowo, proving that women from the developing world also have the ability to excel in the architectural profession. This means that women interested in the profession should be encouraged to pursue their professional dreams to the zenith and not deny the profession of the contributions that they would have made. The knowledge of these invoked the curiosity about the experiences and status of female students in schools of architecture. The foregoing thus inspired the desire to study architectural education from the gender perspective.

1.2. Problem Statement

Researchers at different periods and in various places have undertaken to study varying aspects of architectural education focusing on isolated or multiple issues (see

for example Aderonmu, 2013; Adeyemi, 2012; Anthony,1987, 1991; Boyer & Mitgang, 1996; Demirbas, 2001; Demirbas & Demirkan, 2003, 2007; Demirkan & Demirbas, 2008, 2010; Dutton, 1984; Schon, 1987; Groat & Ahrentzen, 1996; Kvan & Yunyan, 2005; Lueth, 2008; Olotuah, 2001; Potur & Barkul, 2009; Powers, 2006; Salama, 1995, 2005, & 2010; Stover, 2004; Webster, 2005). These studies pointed out areas of pedagogy, experience and performance that need attention (Aderonmu, 2013; Demirbas & Demirkan, 2003, 2007; Demirkan & Demirbas, 2008, 2010; Kvan & Yunyan, 2005; Lueth, 2008; Powers, 2006; Sara, 2002). While gender, among other factors like ethnicity and socio-economic status (Cuff,1991), has been known to often affect students' learning experience in the school of architecture, not so much attention has been given to gender issues in learning and related fields in architectural education (Sara, 2002). The United Nations, in its quest for gender equality, constantly advocates that gender be incorporated into all research (United Nations, 2002). This is because it has been recognised by researchers and other agencies such as the United Nations Development Programme (UNDP) that situations, issues and policies affect males and females differently and unequally (Lengermann and Niebrugge, 2010; UNDP, 2014). This was deemed necessary for the purpose of understanding the position and situation of all women relative to men.

Among the existing studies on gender issues in architectural education, some have employed a piecemeal approach and focused on general issues (Ahrentzen & Anthony, 1993) faculty issues (Ahrentzen & Groat, 1992), creativity issues (Potur and Barkul, 2009), student learning issues (Datta, 2007; Oruwari, 2001), and student experiential issues (Corroto, 1996). However, only two studies (Demirbas & Demirkan, 2007; Demirkan & Demirbas, 2010) combined gender and mixed issues like learning styles and performance with the samples drawn from minor segments of the school population and even some comparing many schools. The findings of these studies have all been mixed because they cut across various learning contexts. Notably, most of these studies treated only the biological difference aspect of gender with only Corroto (1996) proceeding beyond this level to investigate gender and students' experiential issues in an in-depth fashion exposing the masculine paradigm entrenchment of that particular school where the study was situated.

While these foundation studies served well in creating a basis for gender studies in architectural education, a need was found for further studies to investigate gender issues in a more logical and holistic manner to facilitate the creation of an effective framework for analysis and a robust body of knowledge about the females who had hitherto been argued to be marginalized not only in education but in the field of architecture, in particular. Previous studies on architectural education generally assumed a one-size-fits-all approach. This study however attempted to fill in the missing gaps and create a clearer picture by improving knowledge of the precise gender characteristics of the students who study architecture, their learning patterns, study preferences, various experiences and how all these relate to their academic performance, as well as map out future aspirations and possibly a career path for their future undertakings.

It is also important to note that, out of all the aforementioned studies on gender, only one was known to be situated in countries outside Turkey and the United States of America leaving a gap in knowledge about the lives of women in less developed countries (Jaggar and Rothenberg, 1993) of the world. Moreover, the United Nations 'decade for women' (1976-1985) brought to the fore that research was needed in order to document the situation of women throughout the world (Momsen 2010). It was thus seen that there existed a need for a primary gender analysis of architectural education in schools of architecture outside these locations.

In summary, the problem that was tackled by this study was to carry out a gender analysis of the learning patterns and experiences of students of architecture in one state in South-Western Nigeria. A gender analysis is defined as a study that,

> *...explores and highlights the relationships of women and men in society, and the inequalities in those relationships, by asking: Who does what? Who has what? Who decides? How? Who gains? Who loses? When we pose these questions, we also ask: Which men? Which women? Gender analysis breaks down the divide between the private sphere (involving personal relationships) and the public sphere (which deals with relationships in wider society). It looks at how power relations within the household interrelate with those at the international, state, market, and community level.* (March, Smyth & Mukhopadhyay, 2005, p.18)

Specifically, this study attempted to investigate learning issues previously studied in the piecemeal approach by combining those directly related such as learning and

academic performance and examining their interaction through the lens of gender. The issues that were investigated according to gender included students' enrolment pattern, their background and gender identity, learning patterns, course preferences, their experiences in learning and their academic performance noting the kind of attitudes and future aspirations these had created for them. The study also examined how all or some of these issues related with the students' final academic performance, through the lens of gender.

In order to understand and have a clear perspective of the position of the female students in schools of architecture, their situation and experience in architectural education, the questions were raised and answered in the current study.

1. What are the socio-economic characteristics and gender identities of the architecture students in private universities in Ogun State?
2. What is the relationship between gender and the learning patterns of the students of architecture in the study area?
3. How do female and male students of architecture in private universities in Ogun State perceive gender influences and describe their experience in the school of architecture?
4. How do the learning outcomes of students of architecture in the study area vary by gender?

1.3. Research Aim

The aim of this research work was to examine gender issues in learning and its outcomes among students of architecture in private universities in Ogun state, Nigeria, with a view to contributing to gender discourses.

1.4. Research Objectives

The objectives of the research are to:

1. investigate the background and gender related characteristics of the students of architecture in private universities in Ogun State;
2. examine how learning patterns vary by gender among the students of architecture in the study area;

3. assess gender differences in the ways students of architecture in the study area perceive gender as an influence and describe their learning experience in the school of architecture;
4. analyse by gender the outcomes of the learning experiences of the students of architecture in the study area.

1.5. Scope of the Study

This study is a gender analysis and the focus is on issues pertinent to learning of different types of male and female students in selected universities in Ogun state, Nigeria. Out of the eight (11) private universities in Ogun state, the three (3) which offer architecture as a course of study were selected. These three were Bells University of Technology, Covenant University and Crescent University. The study mainly focused on the design studio because this is regarded as the central course in the school of architecture (Ibrahim & Utaberta, 2012). Also investigated were experiential issues and students' perceptions about gender in the school of architecture. Finally, investigation was made on the learning outcomes, which included aspirations and academic performance, of male versus female students in these three schools. It is important to note that gender was the major yardstick or instrument for analysis thus an investigation into gender identities and background characteristics of the subjects was conducted in order to achieve the set objectives. Students from 200-Level to M.Sc. 2 were the study population. The 100-level students were left out because they had not started offering the main architecture courses.

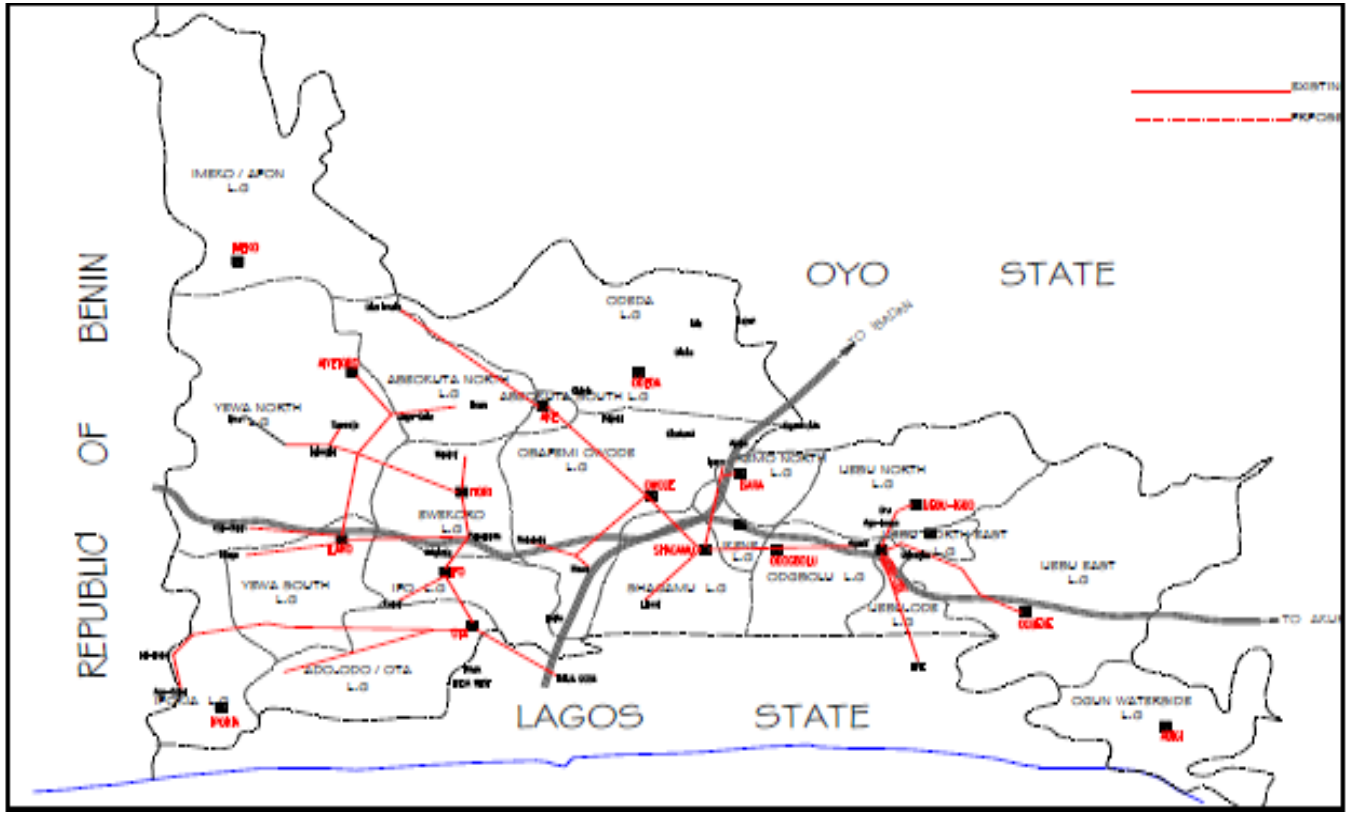

Figure 1.1: Location of Ota and Abeokuta in Ogun State.
Source: Ogun State Regional Plan (2003)

1.6. Justification

Several scholarly works on architectural education exist in several countries of the world. Many scholarly works on gender in general education also exist. However, gender studies in design and architectural education, are still at the emergent stage. The United Nations has constantly alerted on the cascading benefits of education of females and is in a continual quest to better understand the position of females. This would be most beneficial because it would promote the ability of females to fully actualize their dreams and also facilitate full integration of women into the building industry. Indicators are constantly being derived signaling areas for attention in a bid to attain gender equality and equity. This study is one of such studies that attempts to contribute to the ongoing discourse. The extant writings and studies of gender in architectural education are however mostly concentrated in schools in the Western and industrialized nations of the world. Since scholars affirm the existence of ignorance about the lives of women in the less industrialized nations of which Nigeria is one (Franck, 1989; Jaggar & Rothenberg, 1993; Momsen, 2010), this study is of utmost importance.

This study investigated the status of female students comprehensively in schools of architecture in Nigeria. This would be mostly beneficial, timely and unique for many reasons. This would be a major study of gender in the Nigerian architectural education system. Also, it fits into the recommended context of studies of the United Nations in its quest for creating rights-based, gender-sensitive curricula, infrastructure, and pedagogy (United Nations, 2002; UNDP, 2014).

A study of gender in architectural education will also contribute immensely to mainstreaming diversity in the ranks of architectural education. This is because it will help to understand the position of females in architecture in preparation for the necessary adjustments to be made for the desired reformation and attainment of gender equity. Study into this area is expected to offer insight into ways to further encourage more women to enroll, boost their performance, satisfaction and retention in the field of architectural education in particular and architecture profession in general. Finally, this study is justified because it will contribute greatly to the slim body of knowledge on gender in architectural education in Nigeria and help position

Nigeria within the burgeoning gender discourse in the field of architecture and in a position to contribute greatly to the promoting architectural education.

1.7. Methodology

The study combined both the survey and case study approach employing both quantitative and qualitative data to describe the situation and experiences of females in Nigerian schools of architecture in Ogun State. This method was chosen because it was judged the best method based on the aim of the research which was to carry out a gender analysis. According to feminist research, rather than breadth and width, a detailed knowledge of the subject of research is advocated. As such, data was first gathered via a carefully crafted questionnaire. This questionnaire was made up of various items emanating from reviewed literature that was relevant to the objectives and research questions.

To achieve the first objective which was on student background and gender characteristics, data was gathered through the architecture learning issues questionnaire and Bem Sex Role Inventory. The data were presented in forms of tables and charts and were analysed using parametric and non-parametric methods as was deemed necessary.

For the second objective which was on learning patterns, data were gathered using the adult education form of Learning Combination Inventory developed by Gary Dainton and Christine Johnston. The data were analysed using univariate analysis and non-parametric tests like the Kruskal Wallis and Mann Whitney U tests.

Data for the third objective investigating gender and school experience were gathered partly from the questionnaires and from in-depth, semi structured interviews and written narratives. A total of sixteen (16) male and nineteen (19) female students (35 students in all) were interviewed with each session lasting for 30 minutes on average. Also thirty-nine (39) students (18 males, 17 females and 4 with gender unspecified) submitted written narratives of their perceptions about how gender mattered in studying architecture. It was subjected to content analysis and presented thematically.

For the fourth objective, the data was obtained partly from the questionnaire, from departmental archives of students' results and from the in depth interviews. The quantitative data were analysed using non-parametric means like the Chi-square and

Kruskal Wallis tests while the qualitative data were analysed using content analysis. The results were presented in tables, charts and figures with full discussions made.

CHAPTER TWO

LITERATURE REVIEW

2.1. The Concept of Gender and Feminist Theories

The literature reviewed covers and discusses the concept of gender, gender differences, factors responsible for them and the several theories associated with these. A review of gender and its influences on higher education follows, focusing on classroom interactions, teaching and learning, student enrolment, student performance, student experiences and aspirations all within the context of higher education. It also contains a review of scholarly works on several gender issues in architectural education highlighting the methodological approaches used for such. The latter part explains the theories, concepts and the conceptual framework guiding this study.

The term gender refers to those social, cultural and psychological traits, responsibilities or opportunities linked, associated or assigned to males and females through particular social contexts (Giddens, Duneier, Appelbaum, & Carr, 2009; Lindsey, 2011). It is a socially created concept, which attributes differing social roles and identities to men and women (Giddens *et al.*, 2009; Idyorough, 2005; Momsen, 2010, March, Smyth & Mukhopadhyay, 2005). Gender transcends just being male or female and comprises the total experiences, expectations, roles and characteristics associated with being male or female. Gender is described as masculine or feminine, while sex is categorized as male or female (Stets & Burke, 2000). Scholars employ the term sex to refer to biologically based distinctions, while gender describes the social constructions of differences between men and women (Marini, 1990). Gupta (2000) refers to gender as widely shared expectations and norms about what is appropriate or inappropriate for males and females in a society.

Gender patterns or roles vary in all known human societies and sociologists vary in their opinion on what is responsible for these differences (Crawford & Unger, 2004; Lips, 2003). It has been argued that these differences in attitude and behaviour are solely determined by nature (Giddens *et al*., 2009; Levin, 1988), while feminists are of the opinion that the differences are caused by social processes. On the overall there is a broad consensus that both factors are responsible in varying degrees for gender differences (Giddens *et al*., 2009; Marini, 1990). Amole (2011) opined that when

sufficiently investigated, there will be greater illumination on the exact roles of nature and social institutions in gender differences and inequalities.

2.1.1 Gender Roles, Sex roles and Gender Identities

As mentioned in the preceding section, gender supersedes being male or female but does not necessarily preclude it. Sociologists have defined several aspects of gender (see for example Giddens *et al*., 2009; Idyorough, 2005; Lindsey, 2011). Concepts like biological gender, gender identity, gender roles and gender expression all interact to determine how an individual lives his life. Gender roles are those functions that are culturally allotted to individuals on the basis of their gender but are not related to biological functions as such (Idyorough, 2005), which can be carried out by a man or a woman. Furthermore, the assigning of such roles varies from culture to culture and over a period of time. What things a man or a woman should do and how a person of a particular gender walks, speaks and dresses varies from place to place and time to time and is most often culturally determined. These are gender roles. A good and ready example is that of men as breadwinners and women as home makers in most societies (Lindsey, 2011). These are gender roles but not sex roles since men or women can carry out either functions. Gender roles contrast with sex roles such as carrying a pregnancy or breast-feeding that are exclusively female sex roles. Gender roles are a set of expectations as to what ought to be the socially appropriate roles set apart distinctively for men and women under particular circumstances (Lindsey, 2011). Sociologists of gender like March, Smyth and Mukhopadhyay (2005) further explain that gender relations refer to all aspects of the social relationships between the male and female sex within a society or with outsiders. It includes those of conflict, mutual support, difference, competition, separation or of co-operation. They may also vary according to other super status categories like race, class, ethnicity or disability.

Gender identity on the other hand**,** refers to one's conception and perception about oneself, as being masculine or feminine. It describes to what extent an individual sees himself or herself as possessing masculine and feminine attributes. Consequently, the actions or behaviour of that individual, correspond to that of positioning. Essentially, people may see themselves as possessing attributes which are perceived to be masculine or feminine thus placing themselves somewhere along a bipolar feminine masculine dimension with some being more masculine and some more feminine and

some combining both (Stets and Burke, 2000). Reay's (2001) gendered femininities describe females which possess varying degrees of attributes which are stereotypically feminine, and combining some masculine thereby identifying traditional females, compliant females, trangressive females and disassociative females. Bem (1981) also identifies sex-typed, sex-reversed, and androgynous gender identities. Sex typed individuals have gender identities that match their biological sex while the reverse is the case for sex reversed or cross-sex typed individuals. Most individuals however, are sex-typed making biological females mostly having feminine or nearly feminine gender identity and males mostly masculine or nearly masculine. One's gender identity could also be a perception by others (March, Smyth & Mukhopadhyay, 2005).

2.1.2 How Genders Differ

Marini (1990) gives a detailed review of how women and men differ and attempts to describe this difference. This review forms the major backbone for this section. From the literature, it was discovered that gender differences exist in social role and status and also in abilities and traits possessed by men and women. Men have been known to be more powerful, privileged and higher in status than women in most societies (Marini, 1990, Giddens *et al*., 2009). More complex forms of social organisations have however modified gender stratification (Friedl, 1975; Osezua, 2013). Increasingly, women are having high status in society because of their roles in economic and sometimes political activities and control property or occupy positions even higher than men but no concrete evidence exists of women controlling more than a small percentage or half of economic or political power (Marini, 1990). The most dramatic status improvements in the lives of women however have occurred in modern industrial societies (Momsen, 2010). At all educational levels, there is an increase in women numbered in enrolment and graduation (Lynch &Feeley, 2009). Also more women are enrolling in more high status male occupations, administrative posts and political offices. Despite these improvements, there is still a wide disparity between the status and roles of men and women in all spheres of life with women being the underprivileged (Hegewisch & DuMonthier, 2016, Jaggar & Rothenberg, 1993). For example in 2015, indicators from the United States of America revealed that the median weekly earning for women of $726 was less than that of men, which

was $895 (Hegewisch & DuMonthier, 2016). Women are also saddled with the traditional but unpaid role of housekeeping, child nurturing and child care in most societies (Giddens *et al*., 2009, Jaggar & Rothenberg, 1993). From the available data, this underprivileged position is heightened in the less developed world such as in African (Omonubi-Mcdonell, 2003) and Islamic countries of the world. There is less information about the status of the women in these countries from the extant literature when compared with their counterparts in more developed countries (Crawford & Unger, 2004; Jaggar & Rothenberg, 1993; Momsen, 2010).

As aforementioned, the differentiation of gender roles and abilities was identified in the literature to be greatly associated with differences in cultural values and norms among so many other factors. This is strongly attached to creation of gender stereotypes which lead to widely 'consensual' beliefs'. These stereotypes are very similar across societies irrespective of age, race, religion, education and marital status, have been held to over time (Brannon, 2004) and some are not necessarily backed up by any evidence. Males are usually assigned instrumental traits, while expressive traits are assigned to women (Stets & Burke, 2000). Gender differences have also been suggested to exist in cognitive style, creativity, independence, susceptibility to influence, general self-esteem, emotionality, empathy, nurturance, sociability, loquaciousness and many others of which there is no consistent evidence (Marini 1990; Crawford and Unger 2004; Giddens *et al*., 2009). Evidence exists of sex differences in quantitative and spatial abilities favouring males (Leon, Tascon, & Cimadevilla, 2016; Levin, 1988), sex differences in verbal abilities favouring females (Torrance, 1983) and in creativity favouring males (Lau & Li, 1996) but these are not reported in all studies.

Lips (2003) revealed that at adolescence, self-esteem levels of girls that were marginally higher at childhood became lower and also that males had higher self-esteem and assertiveness than females who had higher levels of anxiety. Self-esteem also varied by ethnicity with males scoring higher across varying ethnic groups except for African-American females who scored higher (Dukes & Martinez, 1994). Higher levels of male aggressiveness have been amply documented and males were found by Hyde (1984) to be 5% more aggressive than females. Females scored higher in orientation toward work, while males were more highly oriented toward mastery and

competition (Marini, 1990). When working for achievement males consistently scored higher on competitiveness (Niederle & Vesterlund, 2011; Spence & Helmreich, 1983). Other attitudinal traits for which gender differences have been reported include self-image, physical strength, size and ability; moral conflict resolution, mortality rates, manual dexterity, and vulnerability to illnesses among several others (Marini, 1990). A later section of this review will offer a more in- depth discourse of other variables subject to gender influence, which are directly related to the subject of study.

2.2. Gender as an Instrument of Analysis

Gender in recent times has become a major instrument of socio-cultural analysis (UN, 2002) as it is known to influence so many aspects of human life and endeavour. It has been found to greatly influence the quality of life, expectations, aspirations, opportunities and achievements of individuals. It also influences allocation of resources to members of both sexes, giving preference to males above females (Marini, 1990; UNDP, 2014). Gender is known to determine or influence the chances that an individual possesses in a society. History gives us insight into women being denied access to voting and education among certain other privileges (Lengermann & Niebrugge, 2010). The struggle to bring this to an end birthed the feminist liberation movement; a major part of the world acclaimed Civil rights movement, which marks the commencement of visible feminist endeavours today. Researchers and experts in the field of gender, like Rihani (2006) and others have often described cascading benefits of educating a female child and use this as an argument to favour gender equality. The main argument is that when females are educated, it reduces mortality rates, promotes greater civic participation and helps to alleviate poverty and control population growth (Rihani, 2006; UNDP, 2014)

Since the inception of the feminist movement, which gave birth to several waves of feminism, the study of gender has gradually found its way into the university curriculum and has increasingly gained a foothold. Gender, originally domiciled in Sociology has been absorbed into nearly every known discipline and area of study. The United Nations (UNDP, 2014) has mandated a ‘mainstreaming of gender’ into all studies. It mandates that there should be a gender dimension or gender analysis to research and scholarly activities and to every field of human endeavour as most extant

research or studies fail to take into account the differences between males and females. In fact achievement of gender equity and equality is the third of the millennium development goals of the United Nations and several nations of the world are gradually working towards achieving this goal.

Gender, however, is intangible and cannot be measured directly. Researchers have developed concepts and scales to assess the gendered perceptions of an individual. Gender ideology and gender identity scales are examples of these. These scales are based on self-assessment scores where an individual rates himself on various attributes, ideologies or beliefs that seem to align with known gender stances like patriarchy, expressiveness or instrumentality. These scores are then used to group or provide insight into an individual's gender affiliations. Examples of such scales are scale of character vignettes (Kroska, 2007); personal attributes questionnaire (PAQ), Bem Sex Role Inventory (BSRI) and the Open sex role Inventory (OSRI). Among these however, the BSRI and PAQ are the most widely used. The United Nations (UNDP, 2014) also believes that gender disaggregated data can be used to measure gender inequality, not only directly from raw data but by transforming them into indicators. These indicators are groups of related data combined into a particular figure and compared to a norm (Eckstein, 2012). The purpose of this is to give an assessment of where issues presently stand in the quest for attainment of gender equality and equity. Feminists who are mainly concerned with documenting the lives of women alone have a broad consensus that certain methodologies of research are more useful in attaining the goal of feminism.

2.3. Gender in Higher Education

The existing literature is rife with discourses on gender issues in tertiary education, university education or higher education as appellations have been assigned. This section touched on five (5) groups of gender issues found in literature in the fields of higher education. These include enrolment, classroom dynamics, student aspirations, learning environment and student performance.

2.3.1 Gender Enrolment by Specialization in Higher Education

Pertinent international issues in Higher education are female under representation and under achievement of women in fields of science and technology (Acker & Oatley, 1993; Bebbington, 2002; Lynch & Feeley, 2009). Globally, women enrolment in

higher education has drastically increased, but is clustered in certain fields of study (Adeyemi & Akpotu, 2004). Between the 1900s and 1970, women enrolment numbers in fields of engineering education was very low (Felder, Felder, Mauney, Hamrin, & Dietz, 1995). By 1988, only 4% of all practicing engineers in the United States of America were female. In 1992, percentages of women in Bachelors, Masters and doctorate degree programmes in engineering in the United States of America were 15%, 14.8% and 9.7% respectively (Felder *et al*., 1995). Research into gender enrolment in higher education tended to focus exclusively on higher income countries implying a lack of information on women in middle and less income countries and their exclusion from social and national development agenda (King & Hill, 1993). In African countries of which information was available, it was reported that female enrolment into higher education between 2002 and 2003 ranged from 24% to 53% in Nigeria (39.9%), South Africa (53%), Tanzania (24%) and Uganda (34%) (Gunawardena *et al*., 2004). Though this corroborated the general narrowing of the gender gap in educational opportunities, it was found to still persist in fields of science and technology (Adeyemi & Akpotu, 1994).

Acker and Oatley's (1993) review of literature and Adeyemi & Akpotu's study revealed that the degree to which the different sexes were represented in science and technology fields also varied from country to country and within countries by ethnic differences and social status. In Nigeria for example, yearly female enrolment figures expressed as a percentage of total female enrolment in all Nigerian universities between 1988 and 1996 varied in the different geopolitical zones. This coincided with tribal and ethnic divisions. It was seen that majority of the females who enrolled in Nigerian universities in those years were concentrated in universities in the eastern and western zones, while the core north and middle belt had the least numbers of females enrolling into universities. It was also found that the female enrolment into Nigerian universities in those years were clustered in non-science and technology fields indicating a need for more detailed and up to date gender analysis of enrolment by specific programmes in Nigerian universities. The rate of attrition of women in science and technology programmes in higher education when compared with that of men was also found to be higher with women either completely dropping out of the

university or defecting to non-science careers (De Graft-Johnson, Manley & Greed, 2003).

Acker and Oatley (1993) were of the persuasion that geographical location notwithstanding, the cause of this under-representation emanated from the fact that women were often led to believe, overtly or covertly, that they were not able to excel in these fields of study. The gender stereotypes that males alone are specially endowed for mathematical and visual-spatial activities combined with that of science and technology not being a field for women popularized in past decades are partly believed to be responsible for this (Lynch & Feeley, 2009).

2.3.2 Gender and Classroom Dynamics in Higher Education

The overt activities such as the teaching methods employed and the interactions between instructors and students and that amongst students in the classroom form the first part of this classroom dynamics. The classroom environment and climate form the second part of this subsection. Basow (2004) used the term gender dynamics to describe the sum total of possible influences gender may have on classroom interactions. According to this researcher, gender and classroom activities interact in several complex ways to yield several complex outcomes. Researchers have also highlighted the influence of gender on both teaching and learning at all levels of education (Grasha, 2002; Sadker and Sadker 1994). Every classroom session involves teaching and learning, which combines interactions between tutor and student and students and students. Moreover Grasha (2002) noted that teaching style; learning style and classroom processes were all interdependent and capable of influencing one another.

Educational psychologists and sociologists believe that gender influences classroom transactions in several ways. Sadker and Sadker (1994) argued that while sitting in the same classroom, reading the same textbook, listening to the same teacher, boys and girls receive very different educations. Kolb (1984) also opined that that learning involves the integrated functioning of the total organism-thinking, feeling, perceiving and behaving. Scholars have also used the terms teaching and learning styles as means of describing these combinations of traits and characteristics possessed by teachers and students.

Teaching involves a complex blend of personal attitudes traits and behaviour s (Grasha, 2002) and the way one teaches easily reveals a person's values, beliefs and philosophy (Starbuck, 2003). Extant literature documents the relationship between gender and teaching. Teaching styles, teacher behaviour, teaching methods or teaching techniques are some of the names used to describe characteristics of teachers and other qualities brought to the teaching task by teachers. Solomon and Miller (1961) defined teaching style as a pattern composed of classroom behaviour, which is consistent over time and distinguishes the teacher from other teachers' teaching style. Gauld (1982) described teaching style as the way a teacher organizes and delivers a body of knowledge. Huelsman (1983) defines teaching style as a complex of personal attitudes, traits and behavior and the media used to transmit to or receive data from learners. Yet to another expert, teaching style is viewed as a particular pattern of needs, beliefs, and behaviors that faculty display in the classroom (Grasha, 1996). It can thus be seen that irrespective of period, the definition remains similar and consists of the manner and method teacher impacts knowledge in a classroom and that this is influenced by the teacher's personality.

The gender of instructors is thought to be related to differences in teaching styles (Basow, 2004; Starbuck, 2003) since gender is all about assigning roles, attributes and values. This is a pointer to the fact that both teaching styles and learning styles are likely to be gender specific (Kolb, 1984; Vygotsky, 1978). In one survey by Lacey, Saleh and Gorman (1998), male instructors' teaching styles were found to be more dominant and exacting while females' styles were more informal and open toward students and their ideas. This finding is similar to that by Crawford and Macleod (1990) who surmised from students' evaluations that female instructors were perceived by students to be more effective in creating a participatory climate for students and Grasha (2002) whose study revealed that women were more of facilitators and delegators. Findings from a study by Basow (2004) on gender dynamics in the classroom corroborated all three findings and submitted that female professors had the tendency to create a more amiable classroom atmosphere, which made every student comfortable by using small group discussions, while male-tutored classrooms comprised more of lectures and usually had a more authoritative environment. The critique by Starbuck (2003) of Lacey *et al*.(1998) and Crawford and

Macleod (1990) is that they relied on student perceptions rather than direct observation and that they failed to take gender differences in the kinds of courses that are being taught into consideration.

In Starbuck's (2003) survey of teaching styles in upper and lower divisions in an American college, it was discovered that in the lower division classes, women also used small group discussions, while the men used more of lectures. In the upper division courses, women were more likely to use power-point slides. However, the study concluded that the school (discipline or field of study) was a better predictor of teaching style rather than gender. This was attributed to the skewed gendered distribution of instructors among schools in the college where the research took place. The gendered differences in the instruction styles were perceived to be spurious and the differences found in the teaching styles were more likely called for by the nature of subject taught. Consequently, Starbuck (2003) opined that a larger multi-college sample would better address the issue. While the larger multi-college sample may yield varying results, various intra-discipline studies would most likely yield more fruitful results since the findings indicate that discipline was a better predictor of teaching styles and would most likely serve as a level playing ground for gender research.

Discipline or field of study, alone however did not fully account for gender differences in teaching styles, as within the same field, gendered differences were also reported. Basow (2004) opined that students would have freedom of self-expression and thus engage in disruptive behaviours in a class tutored by women. This was supported by Crawford and Macleod (1990) who found that students generally tended to participate in Female professor's classes more than in those of males because it was thought that female professors were more student-oriented. The conclusion from this review was that male-female differences existed in all the interactions between teachers and students but the type, extent and magnitude of the perceived differences varied from one scenario or context to another.

Fennema and Peterson (1985) hypothesized a gender influence to the theory of autonomous learning behaviour. It reported gender as a possible cause of differences in mathematics achievement stating that female under achievement was fueled by stereotypical beliefs about the inappropriateness of independent behaviour for their

gender. Males for whom society believes public speech more appropriate had more interactions with their teachers, successfully obtained more help than females from the teachers and thus achieved better grades. Active participation in classrooms is believed by teachers to enhance deep learning of the subject matter (Romano, 1994). While reporting a survey carried out in Stanford University, Romano, (1994) calls for a better understanding of gender dynamics in the college classroom and suggests that teachers should be willing to change behaviours or patterns that affect women negatively in order to enhance their academic achievement since college is an important developmental time for students. Women undergraduate students were reported to be less assertive than men in the classrooms, taken less seriously than male students, to be at the receiving end of sexist remarks and actions, and received less attention from their professors. They also reported feeling "demeaned, disgusted, stupid, self-conscious, overpowered, ignored, minimized, trivialized and marginalized" (Romano, 1994, p.1.) and felt more comfortable with female professors than with male. It can be deduced from the above that since female students have been reported to talk less in the class, this may affect their thorough understanding of the subject matter, and hence their performance

Riordan (1992) suggested that women's self-esteem decline during their college years and that women who attend single-sex schools have higher self-esteem than their counterparts in co-educational institutions. Sadker and Sadker (1986) posited that low self-esteem starts in the classroom where a student's involvement in class relates to her self-concept. Later research findings suggest that low self-esteem may be caused by the fact that males get more attention from teachers than females since males are more likely to call out for attention from the teachers than females (Sadker & Sadker, 1994)

Other class room interactions studies sometimes revealed complex gendered patterns. An example is the tendency for male students to challenge the female professor's authority (Canada & Pringle, 1995), to rate the female professor lower in evaluations which may not be so obvious to researchers studying student evaluations (Feldman, 1993). For example, male students reported feeling less comfortable with the teaching approach of female tutors and sometimes viewed female professors as not so 'professional' like the more authoritative male counterparts (Basow, 1995). Students

generally reacted negatively to tough grading in female professors (Basow, 2004) than in males. These are just some examples of complex interaction patterns which could possibly get more complicated with the discipline in view (Basow, 1998) but have been discussed just to further shed light on the complexity of gendered classroom dynamics. On the overall, it could be concluded that gender and classroom activities interact in several complex ways, which vary according to field or level of college study. This is partly because various subjects require various combinations of several approaches to teaching and learning and partly because of individual unique characteristics both on the part of the tutor and on the part of the student. The learning environment should however be made as conducive as possible to cater for the needs of all concerned , the student especially, so as to maximize their classroom experience and foster deep learning (Datta, 2007).

Like teaching styles discussed earlier on, learning styles are amply documented in extant literature. Felder and Silverman (1988) make us to understand that students learn in several varying ways such as by memorizing, acting, visually, analogically, by reflecting and in a myriad of several other ways. Learning styles are described by Felder and Brent (2005) as "characteristic cognitive, affective and psychological behaviours that serve as relatively stable indicators of how learners perceive, interact with and respond to the learning environment" (p.2). Several learning style classifications exist in the literature like the early ones which are based on cognitive theories of earlier scholars like Jung, Piaget and Freud include Kolb's experiential learning theory, Myers Briggs type indicator; Canfield's learning Style inventory and Felder-Silverman model inventories. Some of them are accompanied by psychometrics or heuristic tools for measuring learning styles. More recent ones include the Felder-Silverman Inventory of Learning Styles (ILS) and Johnston 's Learning Combinations Inventory(LCI), which have been widely used to identify the learning styles of students and more importantly to develop methods for improving instruction and overall student performance at all levels of education, higher education inclusive. The extent to which a student will learn is partly determined by how well his learning style matches that of the instructor's teaching style and partly by his 'native ability' (Felder & Silverman, 1998). Age is also an important determinant of learning (Sizoo, Malhotra, & Bearson, 2003). In a study of adult-

students at an American college, the Learning and study strategies inventory was employed and the students were found to have learning characteristics different from their younger counterparts. The same study also revealed that both adult male and female students had higher anxiety levels but females had higher motivation levels than males.

Gender has been identified as a factor influencing learning styles as gender differences in learning styles have been severally reported (Severiens & Dam, 1994) with the results being varied and mixed. Male students were found to be more inclined to work independently and to set goals and objectives, while disliking classroom discipline. Female students on the other hand liked to know the instructor personally and were less inclined to work independently preferring to work and study in small groups (Pettigrew & Heikken, 1985; Sax, 2009). A study revealed that learning styles do not differ by gender as much as by gender identity (Severiens & Dam, 1997). Both male and females genders and people with androgynous gender identities were found to use more of meaning directed learning style. For the reproduction-directed learning style, women (female gender and persons with feminine gender identity) used it most. Persons with a feminine gender identity scored high on using the Prove yourself directed learning style. Summarily, it was found that learning context, subject of study and teachers input all contributed to the heterogeneity of learning styles and that gender identity did not necessarily cover for gender when correlated with learning style (Severiens & Dam, 1997).

2.3.3 Gender and Classroom Environments

The classroom environment or classroom climate influences the educational experience either positively or negatively (Sadker & Sadker, 1994). Several aspects of classroom climates or environment are identified and described in extant literature with the instructor identified as the major moderator of the classroom environment (Leff *et al.*, 2011). Presentation of material, interactions with students, class atmosphere, students' attitude to learning, assessment methods, course content and others, were also identified as key aspects of the classroom environment that influence the learning experience for students.

Salter (2003) identified and described types of classroom environments like extraverted or introverted classrooms and thinking, sensing, intuitive or feeling

classrooms. An extraverted class environment involves all members in the class interactions and compels them as much as possible to be involved and active. While the introverted environment pushes the work to individuals and allows for more of note taking, reading assignments and self-directed work (Salter, 2003). Sensing environments emphasize facts and figures; intuitive classrooms employ experimentation and inquiry. Thinking classrooms are fixed in their approach, while feeling classrooms are humanistic in their approach and are process-oriented. It was discovered in Salter's study that the learning outcome of extroverted classrooms for students were mostly positive, while that in introverted settings were negative.

Gender also plays a major part in maximizing satisfaction in the college classroom climate which has been described as chilly for women especially in science and technology fields (Sandler, 2005). Sandler identified certain practices such as devaluation, stereotyping, harassment and faculty behaviour by male and female instructors which further aggravate this chilly climate. These practices as further argued by Sandler, seem normal, unimportant but when regularly repeated form a pattern which serve to dampen women's ambition, class participation, and their self-confidence. This assertion further lends credence to the fact that what happens in the college classroom goes a long way to modify or eventually truncate female's aspirations. Persaud and Salter (2004) found most engineering classrooms to be introverted-thinking environments with females indicating dissatisfaction with this kind of learning environments where one way communication was prominent. Interaction among students, peers and instructors was often absent in this learning context, rather independent work and competition was rife, high-achievers were publicly acknowledged and the classroom arrangement was rigid (Salter, 2003). Later studies by Persaud and Salter (2005) also revealed that females thrived in extraverted feeling environments, which were smaller, collaborative and involved hands on demonstrations and real world applications of concepts. This classroom type fits the "unisex" model classroom described by Sadker and Sadker (1994). The model classroom, which was believed would favour women's way of knowing was envisioned as a place where students would seat in groups clustered around smaller tables involved in two-way communications and hands on demonstrations of concepts. In conclusion, while the findings discussed above may not apply to all fields

of study, more studies that are discipline specific are needed. Concrete lessons can be learned from those studies especially those which involve practical learning. One of such beneficial aspects is that of having students sit in smaller groups and sometimes encouraging two-way communication.

2.3.4 Gender and Students' Aspirations in Higher Education

An aspiration can be defined as a goal or what one desires to become or achieve. There are career aspirations and academic aspirations. Career aspirations refer to the type of planned job or work achievements, which an individual aims at engaging in or attaining to. Academic aspirations on the other hand refer to planned achievements of an individual in the course of or at the end of an academic course of study in any institution. These aspirations could be short term or long term (Baird, 2005; Corell, 2001). Achievements and attainments are usually offshoots of aspirations. Inability to achieve these aspirations suggests that influences exist that truncate or modify them (Baird, 2005). The existing literature reveals that several factors influence human career and academic aspirations of students and prominent among these are ethnicity, parents, socio-economic or educational background, gender, academic experiences and above all sociocultural factors (Williams, Zimmermann, Edwards Jr., Chhinh, & Kitamura, 2012). All these factors combine in several ways to impact upon the aspirations that an individual may have. In this study, which was conducted among 6th grade Cambodian students, Williams *et al*. (2012) found that aspirations were lowest among girls from poor families. This indicated that poverty level was a predictor of aspirations for a female child. The same study also reported that school teachers sometimes countered such aspirations among the poor female students and influenced them to aspire higher.

Cultural identity, of which gender is a major player, was found to also place great constraint on female aspirations, career choices and eventual competence (Correll, 2004). This means that what the culture believes about the status of the woman influences her to make career choices not necessarily according to her desires but rather according to cultural acceptance. Student gender and teacher gender may also interact in complex ways to influence students' career choices and aspirations. Basow, an American scholar, has in collaboration with other scholars done considerable research in this area. For example in one study, it was discovered that both male and

female teachers and parents were a heavy source of influence to female students' choice of colleges and course of study. Males, however, were primarily influenced by men. This finding however may only apply to the white race. (Basow & Howe, 1980) Female-students in higher education rather than male had a greater likelihood of choosing female faculty as their best professor (Basow, 2000) and often as role models (Vylatcil, 1989).

In a study of gender structure of career goals by Baird and Hardy (2003), it was discovered that the employment status of mothers affected male and female offspring differently. It had a strong influence on the gender ideology possessed by daughters. Daughters with unemployed mothers tended to have a traditional gender ideology, lower self-efficacy or sense of agency and were less likely to aspire to paid employment. The daughters of employed mothers on the other hand had more egalitarian attitudes and aspired to work, probably like the mothers. In architectural education, the rate of attrition or deflection to other careers by women in the schools of architecture in UK and the United States of America was rated higher for women than men (De Graft-Johnson *et al*., 2003). This suggests that career goals and aspirations of females though initially high when not properly nurtured are often unsustainable in the face of challenging situations. This, however, needs further investigation.

2.3.5 Gender and Students' Performance in Higher Education

Gender differences in academic achievement or performance at various levels of education have received considerable attention. This could also be subject to a blend of several factors including childhood training, cultural background, parental expectations, school environment, self confidence levels and individual ability (Felder, Felder & Dietz, 2002). Literature survey indicates mixed results for gender performances in higher education, however, one common finding is that generally, females outperform their male counterparts with exception of technology- related fields (Dayioglu & Asik, 2004). This study conducted in a large public Turkish university yields several interesting results to corroborate the previous statement of factors interacting varyingly to determine performance thus making it difficult to generalize findings about performance and gender. Dayioglu and Asik (2004) discovered that with respect to university entrance scores, female performance was

poorer but once admitted into the school, female performance on the average was higher than that of males using the cumulative grade point average scores (CGPA Scores). The performance however, further varied in favour of males and females interchangeably across specializations, levels of study, visibility of genders and residential arrangements among others. In a continuing study of chemical engineering student performance in a university in the United States of America (Felder, Felder, Mauney, Hamrin & Dietz, 1995), it was discovered that over five semesters, the performance scores of female students had eroded relative to that of the males even though the same females initially had entry scores and credentials equal to or better than those of their male counterparts. This erosion was attributed to several factors such as anxiety, mismatch between professor's style and student learning style, discriminations from instructors, discounting and poor visibility of females in engineering schools. Felder and his cohorts recommend that closer attention be paid to female students' performance and other gender issues to close the wide gender gap in engineering education.

2.4. Gender and Architectural Education

Following the previous sections of this literature review where concept and theory of gender was amply discussed and a broad survey of gender and its influences in higher education was undertaken, it is pertinent to carry out a more focused review of the literature on gender issues in architectural education. Gender issues refer to identified cases of gender inequity, inequality or differences, which are considered as undesirable or unjust and need remedial action (Idyorough, 2005). Gendered practices in architectural education (Ahrentzen & Anthony, 1993) refers to those differences, inequalities or subjugations between females and males in schools of architecture, both overt or covert, needing attention or remedial action to provide equitable outcomes for both genders. It could include pinning our social expectations or means depicting or assigning certain talents or attributes as solely belonging to males, hence pigeon holing, limiting or restricting females or males to certain roles or aspects of architecture or trades, which are thought to be suitable for them (Clegg & Mayfield, 1999). The following section contains a review of the various gender issues raised in the literature, grouped and discussed with special attention to the approach from which those studies were carried out.

2.4.1 Gender, Access, Enrolment and Attrition Rate

From available information on the International Archive of Women in Architecture (IAWA), of the Virginia Polytechnic Institute and State University, prior to 1888 in Finland and 1898 in France, gender was a major yardstick for a candidate's eligibility for access into any school of architecture. Women were deemed unfit for the study of architecture. According to this database, Signe Horborg (1862-1916) of Finland was the first woman ever admitted to formal education in architecture in 1888, while Julia Morgan was admitted in 1898 into the School of Fine Arts (Ecoles des Beaux Arts) in Paris after being previously denied access based on her gender. From the website also, it was gathered that in the United Kingdom, Ethel Charles was the first woman to be admitted into the RIBA against stiff masculine opposition in 1898. She and her sister were reported to have been previously denied access into Architectural Association school of architecture on the grounds of their gender and had to attend the more liberal Bartlett school of architecture from where they graduated with distinctions. Louise Blanchard Bethune however is regarded as the first professional female architect who rose through the ranks of the apprenticeship system and was formally accepted into the ranks of the American Institute of Architects (AIA) in 1881.These women pioneered a cause, which women all over the world are enjoying today. Literature however informs us that though access is free and fair, equity in terms of enrollment proportions of women to men in these schools is still generally unsatisfactory (Ahrentzen & Anthony, 1993; Niculae, 2012). The student population in most schools of architecture, in terms of gender is gradually attaining a tilted structure compared to the skewed composition previously reported. De Graft-Johnson, *et al.* (2003) reported that for 22 out of 35 schools of architecture in the United Kingdom, 37% of student architects were women. In the USA and Canada enrolment rates of both male and female were reported to be almost at par signifying that the gender gap in enrolment into architectural schools is almost wiped out (Andres & Adamuti-Trache, 2007; National Architectural Accreditation Board, 2015) in those countries. Gender analysis of enrolment into Nigerian universities found in the literature (Adeyemi & Akpotu, 2004), noted the slim enrolment of women into science and technology fields of study of which architecture is notable but failed to give concise information about gendered distribution in schools of architecture across the nation. The closest data to architecture or environmental design programs as a

whole reported by Fapohunda (2011) estimated the female enrolment at 22.8%, which indicated a tilted group of women been in the minority. The lack of female faculty to serve as mentors and role models is cited by Andres and Adamuti-Trache (2007) as a barrier to achieving equality in university enrolment between males and females.

Another identified issue was that of the dropout rates otherwise known as the attrition rate. Fowler and Wilson (2004) reported that dropout rate for women in the United Kingdom was previously higher than that of men but both were now at par. Women were reported to drop out of American schools of architecture at a far greater rate than men. More interesting also was the fact that the higher an individual ascended in the ranks of architectural education, the lower the likelihood it was a woman. Ahrentzen and Groat (1992) reported that as at 1990, 37% of all baccalaureate and 28% of doctor of architecture degrees awarded in the United States of America went to women. More recent findings (NAAB, 2015) however showed that this trend had been altered in favour of the women. In 2014/2015-academic session, 43% of baccalaureate and 47% doctor of architecture degrees were awarded to women. No similar empirical study for architecture schools in Nigeria was found in the literature which is a pointer to the need for more studies in this direction.

2.4.2 Masculinist Culture of Architectural Education

From extant literature, architecture like engineering is viewed as a male domain with both 'rugged' or 'masculine' parts and 'softer' or 'feminine' parts (Clegg & Mayfield 2005; Lynch & Feeley, 2009). The softer part of product design like furniture making or softer part of architecture like interior design have been stereotyped as the 'possible' suitable domains for females who are bold enough to venture into this 'male world'. Though the idea of a female architect is no longer novel, (Fowler & Wilson, 2004) women with passion for the traditionally masculine professions were viewed as 'anomalies' (Clegg & Mayfield, 1999). Perpetuating these stereotypes, may deny potentials from attaining their dreams or aspirations or goals.

In a critique of current trends in the design studio of Schools in the United Kingdom, it was argued that "Architecture…is entrenched with a masculine paradigm evident first in the numbers, dropout rates, dismissal of existence of gender inequality and little research on women's experiences" (Sara, 2002, p.18) and generally of having a phallocentric nature (Niculae, 2012). Lynch and Feeley (2009) further explain this

masculine culture found in the similarly technical profession of engineering as one in which there was a promotion of impersonal materials and texts and media (Stratigakos, 2001) which always depicted architects with images of white, middle-aged males. There are few or no female role models in the architectural schools or work place. The atmosphere is reportedly always saturated with macho talk, jokes or humor which is sexist in nature (Ahrentzen & Anthony, 1993) and often excluding women. The appearance of the usually few women was also described as unfeminine and unattractive (De Graft-Johnson *et al*., 2003) and remarks of there being no woman in architecture or architecture not being for women have been popularized.

The culture of the discipline is also peculiarly regimented and becomes a survival of the fittest for those females who can imbibe the masculine virtues that it takes to survive in the profession. The culture of working, drawing or building models continuously and especially all night long in the studio with eating and snacking at odd hours and listening to loud music to enable them meet submission deadlines or to forestall embarrassment or falling short at the jury is normal in the profession (Webster, 2005). These may however not be ideal for female students and have other far reaching implications such as leaving them thick skinned and defeminized or androgynous not being able to fit into the socio-cultural definition of being women in their respective cultures. Females who have attained high level positions both in education and practice of architecture have also been described by Lemkau (1983) as androgynous, which means women possessing male attributes that could either be innate or imbibed by socialization. The Committee of Education of the American Institute of Architects (AIA), described an architect in the following words:

> "…one ranking in the class of men of culture, learning and refinement, differentiated from the others of his class…by his function as a creator of pure beauty…it follows that the objective of architectural education must be the breeding of gentlemen of cultivation…who can inspire, organize and direct widely different classes of men. (Grossman & Reitzes, 1989, p. 30)

Looking at this definition of an architect, it could be surmised that, originally the profession of architecture was an exclusive men's club. The initial acceptance of women into its membership could then be viewed probably as an experiment or test or an equal-opportunity offer for all. It was thus left for women to meet up with the demands of the profession and acclimatize into the culture of the profession. The

increasing numbers of women who have ventured into the profession over the world then suggest that more women have chosen to embrace the profession irrespective of this masculine nature. Increasing awareness and expression of women's discontentment with the profession or field of study has been expressed. Women are increasingly becoming the subject of publications and articles which suggest their dissatisfaction with the masculine status-quo in the profession and clamour for change. Absent, however are studies of the collective experience of females in specific school environments especially in developing countries-cross-sectional and longitudinal studies to observe to the extent to which this masculine paradigm pervades their settings.

2.4.3 Gender and Classroom Dynamics in Architectural Education.

Classroom dynamics is a broad topic, which covers the teaching style, the learning environment, and classroom interaction patterns. The classroom climate especially the science and technology classroom was described (Crawford & Macleod, 1990; Sandler, 2005) as a chilly one for female students. In the previous section of these thesis, it was discussed how the learning environment could serve as a building block or stumbling block to deep learning for either male or female students. Likewise, the architecture classroom, the design studio where teaching of architectural skills in universities, normally takes place may not be exempted. As argued by Lueth (2008), a learning environment functions both as a learning center and a complex social organisation. Lueth (2008) described the design studio as the place where real cities and buildings are designed, improved and transformed. Dutton (1984) asserted that when compared to typical classroom scenarios, studios are active sites where students are engaged intellectually and socially, shifting between analytic, synthetic, and evaluative modes of thinking in different sets of activities (drawing, conversing, and model-making). The classroom dynamics in the studio was quite different from that in the traditional classroom. Gendered practices which could inhibit the studio as an enabling working environment for female learning include school regulations, privacy and safety issues especially when it comes to all-night working (Fowler & Wilson, 2004; De- Graft Johnson *et al.,* 2003). For example, female students' lack of boldness, confidence and daringness were reported in a study of the architectural design studio in a Nigerian University (Oruwari, 2001). These could be attributed to early gender

socialization and strengthened by gender insensitive pedagogical practices found in that particular school of architecture. Seeing that the students in the study were in their third year of study, unfavourable pedagogical practices or other deep rooted societal factors could have eroded the confidence, academic strengths and skills of these students over their period of stay in that school. Considering fully these arguments and findings, it then follows that the instructor should be able to create an enabling atmosphere to teach and guide students (male or female) through the design problem both building their confidence where necessary and shun any other practice that may dampen the morale of the students. The studio culture and environment must thus be painstakingly organized both socially, psychologically and academically to be a conducive environment for deep learning to take place. For deep learning to take place, a motivational context must be fostered. This context should effectively cater for the unique learning needs of the individuals in the studio where architectural pedagogy is said to be housed. An example of needs to be catered for cuts across those that influences such as gender or culture may create (Vygotsky, 1978). Instructors must be able to ask themselves if the students find them easily accessible and if they are sensitive to the learning needs of the students. Do they allow for possible feedback from students? Are both male and female students able to learn a creative process of design (Datta, 2007)? This is imperative to create equitable outcomes for both male and female students.

To further buttress the foregoing argument, Ahrentzen and Groat (1993) believe that the socio-educational context of the university in which the skills, knowledge, and attitudes toward the practice of architecture develop-plays a strong role in restricting or nurturing the potential of many women in this field. Datta (2007) investigated how this "socio-educational context" influenced learning, motivation and attitudes amongst male and female learners in architecture and found that there was a gender bias both in learning styles in and learning contexts. This means that some female learners were not able to benefit fully from the learning model of the Irish school of architecture in question. Datta suggested the need for further investigation of gender in other studio learning contexts in other geographical locations to broaden the gender discourse in architectural education.

2.4.4 Gender and the Architectural Jury System

The courses studied in schools of architecture, described in the literature can be broadly divided into four groups (Demirbas, 2001). These include fundamental courses, technology based courses, artistic courses, and design courses. Assessment for the first three groups is normally done by traditional methods like assignments, projects, examination, seminars and other methods (Demirbas & Demirkan, 2007) but student performance in the design studio is reviewed, judged or evaluated by the jury method where a group or panel of experts are assigned to collectively evaluate a student's design proposal (Anthony, 1987; Demirbas & Demirkan, 2007; Frederickson, 1993; Webster, 2005). The students in person defend their design proposal, verbally before the jury. The jury – or 'review', 'dialogue' or 'crit', as it is alternatively known – remain central to the pedagogy of architectural education across the world and is generally regarded a celebration of student creativity and held up as a paradigm of student-centered learning (Frederickson, 1993).

The jury system, however, has been severely criticised (Anthony, 1987; Frederickson, 1993; Sara, 2002,) and scholars from surveys and ethnographic studies concur broadly that the jury system is inadequate, needs reviewing or alternative methods of student design studio review be developed (Anthony, 1987; Frederickson, 1993; Webster, 2005). Frederickson's study of intra-jury communications tested three hypotheses of which two directly relate to the present subject of study. The first hypothesis was "that female jurors speak less frequently and for a shorter duration than their male colleagues" (Frederickson, 1993, p. 40) and the second was "that female students are interrupted more frequently by jurors than are male students and that juries of female students are of shorter duration than those of male students" (Frederickson, 1993, p.40). When tested in ethnographic observations in 112 juries across 3 design schools in the United States of America, the two hypotheses were valid. When the jury was headed by a female, the female juror commentary duration was found to increase and also the female students had shorter juries than males and their juries were interrupted more frequently than that of their male counterparts. Female students' jury duration was found on the average to be 0.73 times shorter than that of their male colleagues. These findings may vary in other academic contexts; hence a replication of it in other settings may be necessary.

2.4.5 Gender and Learning Styles in Architectural Education

Learning in the school of architecture is different from that which occurs in the traditional classroom. Learning centers greatly around the design studio. The courses in schools of architecture are numerous and cover a wide range of topics but all these courses directly or indirectly impact upon the architecture design studio (Aderonmu, 2013; Ibrahim & Utaberta, 2012). Learning in the design studio is both project and problem–based, where a design problem is given and solving it serves as a means to teach the student how to design. It requires a one on one contact between the student and the instructor whose task is to guide the student through the problem solving process. It also involves the student working together with his peers or classmates to generate solutions to architectural design problems, which are presented through drawings. Student learning issues have been declared to be very important in architectural education (Datta, 2007; Sara 2002). In order to foster deep learning among students, study of their learning styles was deemed necessary so as to promote teaching that suits the concerned students. Deep learning is described as that teaching outcome where the students are able to develop reasoning and critical judgment leading to self-development as against surface learning where mere knowledge and acquisition of skills is transferred (Datta, 2007).

Individuals possess varying learning preferences and predilections (Brown, Hallet & Stoltz, 1994; Johnston, 1994) that describe the easiest way by which they obtain understanding of a subject matter. Some people learn by sensing, some by visualizing, some by verbalizing, some by reflection and some by doing (Felder & Silverman, 1988). Several theories of learning exist in the literature such as experimental learning theory, action theory, reinforcement theory and holistic learning theory among several others. In addition to these theories, several learning styles and instruments for measuring them also exist. Some of such instruments include learning style inventory of Kolb, inventory of learning styles (Felder & Silverman, 1988), Johnston's learning combination inventory used by Datta (2007), Keirsey temperament sorter, Myers Briggs Type indicator, which measure either the behaviour of the individual or his preferences for learning. Students' learning predilections and styles could be subject to so many factors or influences such as academic and family background, ethnicity, religion and several other factors. Scholars (Kolb, 1984; Vygotsky, 1978) suggested

that learning is discipline, culture and gender specific and several studies to test these are reported in the literature. Those that were found relevant to the field of architectural education are discussed.

The Keirsey Temperament Sorter was administered to both faculty and students of landscape architecture in a Canadian university. This was to determine their learning styles with a view to facilitating more effective teaching (Brown *et al*., 1994). More than three quarters (76%) of the students in the school were found to be either intuitive feelers (55%) or intuitive thinkers (21%). These implied their preference for problem based learning, group work, seminars , workshops and colloquia rather than traditional lecturing methods. When the test to determine teaching styles of the school's faculty was administered, it was discovered to be quite similar to that of the students with the greater proportion of them also being intuitive. Useful suggestions were given on how to improve the learning experience of the students. The study however failed to acknowledge gender as a tool of research analysis except for noting that there was gender equality in student enrolment. This was a notable gap to be filled by subsequent studies in a bid to fulfill the gender mainstreaming agenda of the United Nations (UNDP, 2014).

Focusing on Bilkent University in Turkey, extensive research on student learning styles at different levels of interior design education has been carried out. The findings of some of their studies as well as that of other scholars on the current study are further presented. Demirbas (2001) investigated the relationship between learning style and performance of freshmen interior architecture students using Kolb's learning theory and found that most of the students investigated were convergers and assimilators. In the first group, 40.5% of the students were convergers, while 34.2% were assimilators. In the second group, 33.0% of the students were convergers and 31.8% were found to be assimilators. This meant that generally, most of the students were strong in what Kolb termed as "abstract conceptualization" (Kolb, Osland & Rubin, 1995, p.52) and entailed "systemic planning, manipulation of abstract symbols and quantitative analysis" (Kolb, Osland & Rubin, 1995, p.52) as against the more free spirited creative approach of art. The learning style of these students seemed to be in consonance with general planning principles of architecture, which entailed a logical approach to solving architectural design problem. The study investigated but

did not find any significant relationship between sex and learning styles of the students in any of the groups. The shortfall of that study with respect to the current subject of discourse was that it failed to investigate gender relationship with learning style. Demirbas & Demirkan, (2003) also focused on the learning style and performance of freshmen students of architecture assessed at different stages in the course of a design problem. Using Kolb's experiential learning Theory, the performance scores of those with different Learning styles at different design stages improved significantly with assimilators making the best progress and accommodators the least. Neither gender nor sex was considered in that study.

Demirbas and Demirkan, (2007) carried out a study exploring the connection between learning styles, students' performance and gender in the design studio. The sample for that study comprised of 3 groups of students. Each group was one of 3 successive classes of freshman landscape architecture students of the same university in Turkey. Using Kolb's experiential learning theory to underpin the study, there were no significant sex-differences in learning styles in any of the three groups. While female performance was higher in art-based and fundamental courses, male-student performance was found to be higher in courses with a technology base. Another study by Montgomery and Groat (2000) using the Grasha- Reichmann scale found gender differences in the learning styles of students of architecture. The female students had a higher tendency towards participatory and collaborative methods of learning while their preference for competitiveness was less. Also, using the Felder-Silverman scale, more females (67%) than males (50%) were found to prefer learning by doing and by group work as described by the active approach.

In another similar study, using the Inventory of Learning styles as the instrument and a sample of senior students, Demirkan and Demirbas (2010) investigated and found no significant relationships between learning styles and students' gender for students of interior architecture. Possible explanations for this could be that the females among the senior students had imbibed the culture of the schools and adapted to the learning models as well as the males. Demirkan and Demirbas, (2008) reported that the Learning Styles of freshmen designers at Bilkent University were mostly assimilators who had strength in the area of analytical skills of theory building, quantitative analysis and technology and had better behavioural skills compared to

perceptual learning i.e. they employed logic rather than feeling. This study again failed to consider the influence of either sex or gender on students' performance.

Kvan and Yunyan (2005) who employed Kolb's Learning style inventory found a significant correlation between learning styles and students' performance in design studio grades. The study found interesting relationships between learning style and performance but gender or sex differences did not feature as a variable in the study. This was at variance with the findings of Datta's (2007) investigation of gender and learning in the design studio. In that study, it was reported that there was gender bias in learning in design studios where the learning environment or context could not fully cater to the needs of some female students. Employing Johnston's learning combination Inventory on second-year architecture students in an Irish University, the females were found to be more inclined to sequential processing, while the males were more inclined to technical processing. This implied that females were more likely to establish links with previous learning while males were involved hands-on with their learning. Datta however enriched her findings by employing another purpose designed learning issues questionnaire to investigate more thoroughly how deeply the students engaged in learning. When asked how often they used design precedents, the findings agreed with the findings of the Learning combination inventory that more females than males were found to do so. The males and females enjoyed various parts of the design process differently. More females enjoyed preparation of drawings but found the design process challenging while males enjoyed modeling which supported Oruwari's (2001) submission. That study also revealed that 48% of females and 23% of males cited peer support as a major means of learning. This was also corroborated by the fact that more females were found working in the studio than males. This is supported by several other studies, which reported that females tend to enjoy learning in smaller groups with their peers (Salter & Persaud, 2005). One female student went as far as saying that she felt that her hard work often yielded results that were far below her input. Other feedback obtained was that the context was too competitive. Datta's (2007) investigation, even though it stopped at sex differences, employed a different approach from all the others by asking questions that were specific to the architectural design process and gave a voice to the expression of the feelings of the students can be regarded as more

feminist and offered richer insight into the specific experience of the females in the design studio.

From the foregoing, two major observations were made. First, it was seen that the findings were mixed because different instruments were used to investigate the learning preferences and secondly, it was observed that the sex of the students alone and not gender was taken into account only in a few of the studies on learning in design studio. These investigations employed only psychometric instruments that were not directly related to the architect's experience. Datta's study which is quite insightful, however, attempted to incorporate a dimension of feminist but it failed to fully investigate certain gender aspects like the backgrounds of the students which could have given a more robust basis for gender analysis. This kind of gendered analysis of a school of architecture environment is a green area of research which needs to be further explored.

2.4.6 Gender and Academic Performance in Architecture

As mentioned earlier, in studies of gender and student performance in higher education, one common finding is that, females generally outperform their male counterparts in higher education with exception of fields of technology (Dayioglu & Asik, 2004). Extant studies of student performance in architectural education that take gender or more loosely sex differences into account are scarce (Demirbas, 2001; Demirbas & Demirkan, 2007, 2010; Roberts, 2007) are scarce. The aforementioned scholars explored the connection between student performance in the design studio or CGPAs and gender sometimes alone and at other times in combination with other factors. A study by Demirkan and Demirbas (2010) investigated the link between students' gender, academic performance and learning style using the Index of learning styles (ILS) developed by Felder and Silverman in 1988. The sample for this study comprised of three successive groups of freshmen landscape architecture students of a university in Turkey. It was found that while female performance was higher in art-based and fundamental courses and the semester grade point average, male-student performance was found to be higher in courses with a technology base. It is worthy to mention that the program of study being investigated was interior architecture, which has a large population of female students. The higher visibility of females may have facilitated the performance of the female students in this context. Kvan and Yunyan

(2005) used Kolb's Learning style inventory and found a significant correlation between Learning styles and student performance in design studio grades. The study however failed to include sex or gender as a variable for analysis.

Another study by Roberts (2007) investigated the performance of architecture students in relation to their performance in secondary school, gender, cognitive styles and spatial ability. None of the variables was able to significantly predict the performance of these students. However, a significant proportion of female students with wholist cognitive styles and students with a verbalizer cognitive style were found to be most unlikely to complete the course. The general suggestion from these previous studies, which yielded mixed findings was that further investigation was needed to clear which kinds of courses males and females were proficient in and whether other cognitive styles would have any impact of the students' performances in the school of architecture. The foregoing reveals that relationship of performance of students of architecture and gender is yet to be amply investigated.

2.4.7 Gender, Creativity and Interests in Architectural Education

Creativity is also an important aspect of learning in the design studio and is considered essential to design (Morrow, Parnell & Torrington, 2004). In the words of Malga (2000), creativity is defined as" the ability to produce as many novel and appropriate alternative solutions as possible for an "ill-defined problem" in a limited time". Creativity is also measured or assessed as part of necessary ingredients to generate effective design output in design projects. Clegg and Mayfield (1999) found out that both males and females came to study different aspects of design for reasons of interest, passion and self-efficacy in creativity and creative endeavour. Findings from research on gender differences and creativity which were originally inconsistent, at different educational stages, have evolved over time (Potur & Barkul, 2009). Ruth and Birren (1985) showed men to be more technically creative. Torrance (1983), however found that gender gap in divergent thinking ability to have closed over time.

Potur and Barkul (2009), in a two-stage, four-year comparative study of gender perspectives in design education, did not find any gender differences in divergent thinking among design students. In the course of the study, Torrance tests of creative thinking (TTCT) had been administered successively to 2 samples each consisting of 147 and 599 undergraduate design students, respectively. The samples were drawn

from different levels of architecture study. The findings of the first stage were further strengthened by that of the second stage and conclusion was made that gender was not an important determinant of divergent thinking. The study, which was done in Turkey, reiterated the low visibility of women in creative fields and concluded by suggesting and indicating prospective directions for future research in that area. Among the recommendations was the need for a departure from using psychometric tools alone to gain insight into the poor visibility in design education as they had been found to yield no significant gender differences in cognitive or creative styles and abilities. The future studies as suggested, should focus on students' experiential factors.

Franck (1989), on the other hand, described qualities which could be seen in the works of female architects that are believed to be worthy of celebration. Women's ways of creating as described by Franck (1989) tows the path of Belenky, Clinchy, Goldberger, and Tarule (1986) by highlighting unique qualities in the designs of some female architects. Summarily, these qualities are "connectedness, inclusiveness, ethic of care, value of everyday life, subjectivity, complexity and flexibility". Franck argued that they were found in social and architectural design works executed by women of various categories by citing precise examples. Connectedness and inclusiveness was found in Dolores Hayden's proposal for redesigning the American dream. Ethic of care and value of everyday life occurred in the social and architectural research proposals of housing reform by women like Catherine Bauer and Edith Elmer Woods, among several others. Jane Jacob's and Cooper Marcus's ability to draw insights from personal experience and knowledge for designing was also reported by Franck (1989) to show a value of subjectivity and feelings as their designs reflected lessons learnt from personal experiences. Jane Thompson was described as a proponent of complexity and flexibility and Eileen Gray's furniture designs also favored both. The dual qualities were also reported to be seen in the New American house designed by West and Leavitt. This argument put up by Franck (1989) suggested the need to validate these findings. This was judged needful because the conclusion was that the study focused on a few women in Western industrialized capitalist society with higher economic and educational resources affirming the need for further detailed study. Such a study would go a long way in acknowledging or

disacknowledging the argument over gender differences in creativity. Also, a study of the process and product of architecture students design could shed more light on this issue.

In another case study of gender differences in architectural design studio carried out in Nigeria, several observations were made by Oruwari (2001). First, the females were reported to have paid more attention to analyzing the given design problems while the male students were very impatient in analysis and hurried on to the actual design paying less attention to understanding the given design task. Second, it was also reported that the female students paid more attention compared to their male counterparts and were generally able to achieve greater functionality in designing the floor plans but façade and massing compositions were generally weaker for females than males. Third, that study found that females were generally weaker in graphical presentation and could hardly master the art of perspective and other projections. They had more problems with lettering, were timid and failed to exude as much confidence in design as the males who were bolder in oral presentations. Further, male students also had a better grasp of building construction, were more daring in drawing building sections of their designs. Females however were more competent in specification of building materials and shied away from building models unless when under compulsion. The author concluded that while some of the findings above could be generalized, they needed to be tested among other students, in other schools over varying periods of time.

2.4.8 Gender and Architecture Students' Aspirations

A survey of 650 students drawn from 6 architectural schools in the USA (Groat & Ahrentzen, 1996) revealed that women were less satisfied with architecture as a career. The general conclusion by most of the females in that study was that there was a mismatch between architecture and the future careers of the females. This was more pronounced with the international students among them and also with the Americans of Asian descent. While investigating the career aspirations of these women, the greater portion expressed the intention of working for advocacy or non- profit firms, interior design, government agency in business, historic preservation, programming or evaluation and as before mostly, the students of Latin-American origins and Asian Americans considered switching to non-architecture careers. It is important to

mention that the career options considered seemed to the students more feminine or female friendly, highlighting the fact about how female-unfriendly the profession had been made to appear to students from schools. The increasing enrolment of females into architecture schools and the low number of women who graduate and enter into mainstream architectural practice raises a question about what happens in the architecture schools to deflect or truncate the academic and career aspirations of these women or at what point is the aspiration truncated. No studies were found in literature to offer insight into the aspirations of female students and thus this is a gap which needs to be filled.

2.4.9 Gender and School Experiences in Architectural Education

Attitudes are an extension of cultural perceptions. Special problems exist which are encountered by women in the design studio. Overt discrimination towards women seem to have mostly been overcome but as suggested by scholars (Ahrentzen & Anthony,1993) there is a mechanism, conscious or unconscious which has continued to affect students learning experience (Haynie, 2003) and successful performance in the studio.

Same sex visibility (Lynch & Feeley, 2009) and classroom dynamics are agreed to contribute positively or negatively to a student's educational experience (Corroto, 1996; Sadker & Sadker, 1994; Sandler *et al*., 1996). While recounting experience as a female student of architecture, where female students were few, Vylatcil (1989) reported that female mentors were scarce and often welcome by female students as they felt it gave them hope in a male dominated school. The female instructors were held in awe by females who felt that they were legends who had achieved much. Even though female instructors seemed to ask more from their female students perhaps because they felt that more was expected from them in a male dominated profession, most female students saw them as encouraging and more sensitive taking more interest in the students as individual. Vylatcil (1989) also stated that they were seen as more impartial and attentive to students' psychological needs. Female instructors seem to feel a special concern for their students in several ways. One is because they report that the students are unaware of potential cultural or social problems and anticipate no problem with women's traditional family roles.

Graduate schools have fewer women, as the women drop out more often before completing professional training. In the 1980s in schools of architecture, female students reported more negative treatment from their male peers than male instructors. Specific treatments such as not being taken serious (Vylatcil, 1989) and others having low expectations of their works (Clegg & Mayfield, 1999; Frederickson, 1993; Vylatcil, 1989) were reported. Women who exhibited dexterity in male stereotyped skills like hammering were regarded as being out of place (Clegg & Mayfield, 1999). Between 1950 and1980, there was a wide-held belief that female presence in schools of architecture was a waste of time and that the "competing demands of marriage and child rearing would probably render practice impossible" and would probably fit only into the "peripheral role of architect writers, teachers or historians" (Vylatcil, 1989, p. 263).

The risk of sexual abuse was reported by female students as a deterrent to staying back late at night in the studio for group work and to carry out assignments with their male classmates. On one occasion, a female student was raped while returning home at late hours from the studio (Ahrentzen & Anthony, 1993). According to Fowler and Wilson (2004), disparagement, humiliation, bias and ridicule was specifically leveled against women were also reported. Specifically, a male architect reported that humiliating female students till only those who were "thick-skinned" remained was common-place in his days in school of architecture (Fowler & Wilson, 2004). These discriminatory practices leveled at women that have been reported need further investigation in other schools of architecture in different countries to gain insight into what obtains there.

2.5 A Review of Methodologies in the Study of Gender in Education

Goetz (1988) identified several conceptual approaches from which gender has been studied in education and divided these into three (3) broad groups. These are sex-difference, structural and symbolic approaches. Studies under the sex-difference approach highlighted the biological differences between the males and females while attempting to prove how such differences enabled one sex to have better dexterity than the other in certain tasks and skills. Structural approach studies of structural functionalism and cultural ecology establish that gender is a dividing factor in education with men and women being differently distributed within and across social

strata. Symbolic approach studies of social interaction and reproduction are those concerned with how interactions of several micro-level societal factors interact to produce varying experiences for males and females and how educational settings act to perpetuate status quo gender stereotypes. Goetz (1988) further explains that these groupings actually intersect and that some defy neat categorization hence the approaches will be examined individually. As has being repeatedly mentioned, several works considering gender related concepts in architectural education were found in the extant literature. It is important to note that these studies all used the terms gender and sex loosely and interchangeably. This is probably because the concept gender has its basis or roots in biological sex differences. The existing studies in architectural or design education, however which consider gender as a sociological term focused on the use of qualitative data to generate issues.

Ahrentzen and Groat (1992) carried out a survey of faculty from 79 schools to investigate patriarchal conventions in schools of architecture employing qualitative means. Also, another study by Ahrentzen and Anthony (1993) was an exploratory study that employed qualitative means. That study is regarded as one of the landmark studies of gender in architectural education to which much reference has been made. The study pointed out gendered practices found in the school of architecture and was very enlightening. Another study, (Groat & Ahrentzen, 1996) used a survey method comprising questionnaires and interviews to study a sample of 650 students from six (6) schools of architecture to find out how the architectural curriculum impeded or supported the progress of women and minorities within the profession. Again, Groat and Ahrentzen (1997) carried out another study, but this time, using a descriptive approach based on qualitative data gathered from in-depth interviews of over 40 women faculty to describe possible facets of change for architectural education drawn from their respective perceptions. Haynie (2003) used a quasi-ethnographic interview approach to study gender issues in technology education. Clegg and Mayfield (1999) employed narratives and recounts of the experiences of women in male-stereotyped fields of study to gather data and from these, drew inference that women's place in design was to a large extent defined by gender. De Graft, Manley and Greed (2001) used a survey to investigate why there was a high rate of attrition of females in both the education and practice of architecture and reported this, using descriptive

methods. The data that was gathered, however, were qualitative data. It is pertinent to note about the foregoing that these studies were enlightening and raised gender issues which need to be validated in further studies. Considering the classification of Lengermann and Niebrugge (2010), this is quite logical because feminist investigations always begin with inquiring about the situation of women.

Fowler and Wilson (2004) conducted interviews to gather data on the women's experience of architecture and used Bourdieu's theory on gender divisions to underpin the study while subjecting the data to a descriptive analysis. Potur and Barkul (2009) employed a 2-stage 4 year experimental study of approximately 600 undergraduate architecture students in Turkey. Using Torrance test of creativity as an instrument, the data were subjected to quantitative analysis and no significant gender differences were found.

Datta (2007) studied gender and learning in an Irish architectural design studio and employed questionnaires for data gathering of students learning characteristics using the LCI, and described analysed it by means and percentages and subjected it to qualitative analysis. The results are very rich and enlightening. Anthony (2002) employed the survey method and interviews to gather data on diversity issues in architectural profession and education and the data was subjected to content analysis.

Demirbas and Demirkan (2007) carried out a case- study based survey and participant observations to find out the relationship between learning style, performance and student gender among freshmen interior architecture students in Turkey. Kolb's learning style inventory, a psychometric instrument was used to gather data on students learning styles and the data was subject to quantitative analysis.

Demirbas and Demirkan (2010), in another study surveyed 100 senior students. Inventory of learning styles questionnaire was used to gather information on learning styles, performance and gender and the data were subjected to tests of variance. Oruwari (2001) employed ethnography in her case study of gender and design in architecture design studio in a school of architecture in Port Harcourt, Nigeria. Frederickson (1993) used an eclectic mode of survey and ethnography to gather data and generate post-factum hypothesis and analysed the data by descriptive means.

Corroto (1996) used self-ethnography to describe the gendered nature of school of architecture where she experienced tokenism and other forms of discrimination which often left her feeling alienated as a female student. Using Kanter's (1995) theory of the token minority, she gave an expose of how the interactions in a school of architecture were gendered. By first establishing that the school of architecture was a skewed group with a male-female ratio of about 85:15, she highlighted the gendered contents of male to female interactions where a female student in the token minority reported a heightened visibility, polarization of differences and assimilation of stereotypical generalization as reported by Kanter (1995).

From the all the studies cited and the arguments and gaps observed from the literature reviewed and discussed in this chapter, it can be seen that the critical ethnography, survey method, case study approach, participant observer approach (ethnography) and experimental methods were used. In some of the studies, only surveys were used, and others employed mixed methods combining two or more of the survey, ethnography interview and experiments to further enrich the findings. In the studies where only surveys were used, the findings were not so rich as to offer us insight into the experiences of females. Several studies (Ahrentzen & Anthony, 1993; Ahrentzen & Groat, 1992; Groat & Ahrentzen, 1996) offered insight into a broad coverage of disparate issues. The more in-depth and focused studies like Corroto (1996) and Datta (2007) gave more specific insight into gender issues in particular learning contexts using a piecemeal approach. The work of Franck (1989) on women's ways of knowing also analysed in a broad overview but did not offer specific insight. The study of Demirbas (2001) which touched on sex differences in performance would have been more insightful if specific experiences of male and female students had been given more adequate attention when discussing gender as an issue and relating it to performance.

In summary and judging from the preceding review the approach of studying gender in architectural education which would most likely give the most fruitful outcome would focus on a particular learning context, and employ multiple instruments of data collection such as ethnography, interviews and surveys to describe the learning characteristics and experiences of the students. This approach is called a critical method of inquiry. This would be valuable, presently not for the sake of

generalization but for gaining insight into the complex ways which students find their places or navigate their paths through disciplines or careers which are gender stereotyped.

2.6 Identification of Gaps in the Literature

Having reviewed, literature in the preceding sections, this section provided a summary of the gaps identified. The gaps were in content, context and methodology. It is noteworthy that though rapidly increasing, presently, only a very minute proportion of the extensive literature on architectural education and gendered discourses in education as a whole has focused on gender. This may be justified because any investigation into the situation of women will first examine gender differences between male and female before delving into the interaction with gender roles and identities. There is thus a gap in content because studies addressing sex differences are more visible while structural issues are yet to be fully tackled and the studies are still at a conceptual stage. Studies on gender in architecture as a whole are yet to delve into several areas in architectural education such as gender and the use of computers, gender and students' backgrounds, gender and learning outcomes amongst others. A gap in context could be seen because as with most gender studies in education broadly, the few visible studies were concentrated in the western and more developed nations of the world. Another gap which is in methodology is that most of the studies have not gone in-depth and attempted to generalize as against the standpoint of feminist research which is to unearth and highlight strongly the position of women while trying to answer feminism's big question, what about the women?

In conclusion, this study sought to fill gaps firstly by telling about learning and learning outcomes of female architecture students in a context different from the existing studies, and was done in Nigeria, a developing nation and the most populous nation in Africa. It also attempted to fill the gap in methodology as it employed the survey and case study of three (3) schools of architecture to capture the status of the female students, their perceptions about gender, their various experiences and the outcomes of these learning experiences.

2.7 Feminist Theory of Gender Difference and Inequality

The main aim of this research is to study the position of the female students of architecture in the private universities in Ogun state, Nigeria. It is thus necessary to

give a review of feminist theoretical perspectives since feminism is about studying women. Feminism is often difficult to define and it involves a variety of widely different approaches and theories (Beasely, 1999). It is defined by Lengermann and Niebrugge (2010) as a wide-ranging study of theories and system of ideas about social life and human experience developed from a woman centred perspective. Feminism deconstructs and challenges existing systems of knowledge by trying to expose their bias against women and the ideologies behind them (Beasley, 2005).

The theoretical account of Lengermann & Niebrugge, (2010) gave a comprehensive classification of feminist theory and this was employed here with minor reference made to other authors. It cited the first major objective of all feminist theory as to investigate the situations and experiences of women in society. The second objective is to treat women as the major and central subject of its investigative processes and thirdly it acts on the behalf of women advocating for a better world for them. Even though feminist theory is situated within sociology, it is the work of an interdisciplinary community and cuts across almost all fields of human endeavour. Feminist theories according to Lengermann and Niebrugge (2010) begin with an attempt to answer a certain question - 'and what about the women?'(p. 198). The patterns of response to this question give a criterion for this categorization. Four possible answers to the question coincide with the general classification of known gender theories which will be discussed in the following paragraphs.

Feminism answers this question of feminists, "what about the women?" by theories of gender difference, which posit that the women in every sphere of life are positioned differently from their male counterparts. The theories further argue that their situation and experience in any given social setting is different from that of their male counterparts. Theories of gender difference may be categorised into three. They include cultural feminism, which extols the virtues of women over that of men (Lindsey, 2011); the explanatory theories give an explanation or locate the causes of this difference on biology, socialization, constitutional roles and social interaction (Marini, 1990), while existential and phenomenological theories posit that the world we live in was developed out of a masculine culture for men with women being seen as opposite of all that men represent. It is firmly believed by scholars with the gender difference perspective that when women's ways are incorporated into societal

structures, the world will be a better place. They also seek to effect change by recognizing, promoting and extolling the unique ways of being possessed by women either on academics, public knowledge and social life (Lengermann & Niebrugge, 2010).

Gender inequality theories give the second answer to the question posed by feminism by arguing that the location or situation of women in society is not only different from men but also unequal (Lindsey, 2011) with women having a lower status or being less advantaged. This is often evident in the premise that women often get less of material resources, social status, power and opportunities for self-actualization than men who share their social location be it educationally, ethnically, nationally, occupationally or any other socially significant factor. This inequality is not caused by biology or any other factor but by societal organization. While recognizing that generally all humans irrespective of sex have needs for self-actualization, inequality theories posit that women are mostly unable to attain this actualization due to gender roles and expectations thrust at them by the society. Scholars of this persuasion however believe that social structures and situations are malleable (Marini, 1990) and equality can be achieved. The achievements of right to equal vote and access to education, is an evidence of this malleability. The foregoing is the main thrust of liberal feminism which believes that women can match men in the capacity for reasoned moral agency by the re-patterning of key institutions like law, work, family, education and media to favour women. First wave feminism declaration of 1848 "...that all men and women are created equal" (Lengermann & Niebrugge, 2010, p. 204) may be employed to describe the pulse of these theorists and highlights their zest for change. The aim of these feminists is for women to have equal chances as men. They advocate equality for all genders in education, economic opportunity, responsibility for family life, media portrayals among several others in the increasingly egalitarian lives in several homes today. These capacities can be secured through legal recognition of universal human rights and by organized appeal to a reasonable public and use of the state.

Gender oppression theories believe that women are not only situated differently or unequally to men but are actively oppressed by men. Gender oppression theories describe women's subjugation as a conscious and deliberate act of men. Men are believed to actively make women on their situation an instrument of their will and

refuse to recognize their independent subjectivity. This means that women are being used or controlled by men and finds expression predominantly in patriarchy which may be described as a male-dominated social structure that operates by active oppression of women (Lindsey, 2011).

Psychoanalytic feminism and radical feminism fall into this classification. Psychoanalytic feminism attempts to provide an explanation for patriarchy employing theories of Freud and other psychologists linking the source of the ever active and perpetual patriarchal behaviour and women's acquiescence to it to the individual male and female psyche (Lengermann & Niebrugge 2010; Lindsey, 2011). Radical feminism on the other hand sees patriarchy or men as solely responsible for all forms of oppression of women which they believe is violent and occurs everywhere. They are militant in their approach and strategies for change. They see oppression in every human institution and societal structure while attributing gender as the most fundamental. It is believed that patriarchy creates guilt, repression, socialism, masochism and manipulation which further engender other forms of tyranny. It may be overly or covertly used to exploit and control. To combat patriarchy, radical feminists advocate that women should create institutions strictly by themselves or for themselves.

Structural oppression theories argue that oppression results from the benefits that some groups of people derive from controlling using, subjugating and oppressing other groups. They analyse how those groups are ordered and operate through the social structure and stratification. Socialist Feminism is concerned with critiquing interrelatedness of patriarchy and capitalism from the stand point of women's experience. It argues that sexism and Marxism are mutually supportive. These form an alliance of radical feminism and Marxism. Intersectionality theory is of the persuasion that women experience oppression on varying configurations and intensity. It argues that while all women may experience oppression based on gender, this varies on the basis of intersection of several vectors like oppression and privilege such as class, race, global location and age. How these vectors intersect for different women vary and so does the experience of similar situations by the women. For instance white women and black women in the United States may experience a situation differently. Widowhood may also vary for women of both races. Notable also is that

privilege exercised by some women may turn on oppression of other women. In explaining this variation, a stand point theory is employed.

Stand point which refers to the perspective of embodied actors within groups that are located on social structure has also being applied to gender studies. Collins (2004) explains this as "group location in hierarchical power relations produces shared challenge for individuals in those groups. These common challenges can foster similar angles of vision leading to a group knowledge or standpoint that in turn can influence the group's political action". It is important to note that a standpoint varies from a perspective which does not qualify to become a standpoint until it speaks for a collective struggle such as that of various races or social classes. The theories of gender discussed above are majorly from the western standpoint and feminist scholars from other nations especially Africans and Asians have largely affirmed that the brand or theories of feminism in western texts largely fails to capture their stories and collective experiences. A notable example is The African scholar, Oyeronke Oyewunmi. In Oyewunmi (2004), the ideology of western feminism describing the situation of the African woman was vehemently opposed, while arguing that the outsider position of the westerner was not capable of telling the story of the African insider, thus encouraging African feminists to develop African feminist theories. These attempts are gradually emerging with several extant documentations of the status, works, struggles and situation of African women across various periods, groups and levels of their society (Afonja, 2007; Morley, 2007; Okunola &Aluko, 2007; Oruwari, 2001). African women have also generally been theorized by the anti-traditionalists and anti-westerners as being subjugated, behind and peripheral blaming custom as one among many causes of this setback about their own situation and a dismantling of the traditional institutions as the solution to this ill (Omonubi-Macdonell, 2003). It is expected that with time, the theories will continue to take shape and African feminine theories will emerge.

2.8 Background Status and Gender Schematisation Theory

There are many background issues that are important in describing the status of individuals in groups. These issues also affect an individual's achievement in life and include the individual's educational background, financial status, parents' educational level and gender. The aforementioned issues and gender in particular are major

instruments of socio cultural analysis (UN, 2000) as it is known to influence so many aspects of human life and endeavour. It has been found out to greatly influence the quality of life, expectations, aspirations, opportunities, and achievements of individuals. It also influences allocation of resources to members of both sexes, giving preference to males above females (Marini, 1990; UNDP, 2014). This is why this work considered investigating some of the major gender concepts defined below.

Gender identity is one of the aspects of gender by which an individual makes sense of the world in which he/ she lives (Stets & Burke 2000) and refers to the extent to which an individual views himself/ herself as possessing masculine or feminine attributes. Dr. Lipsitz Bem's theory of gender schematization (Bem, 1981) is a social cognitive theory explaining how individuals become gendered in society. Gender schemata or networks of information which Bem claimed were responsible for the transmission of gender associated traits or information have often showed up in how an individual manifests sex appropriate traits. These traits could be heavily manifested in an individual's gender identity which could be sex-typed, cross-sex typed, undifferentiated or androgynous. For example a male trained with female roles would live out his life exhibiting traits appropriate to a woman. It was possible for people of either sex to fall into any gender identity group. Androgynous people as described by Bem are male or females who have a high degree of both expressive and instrumental traits. A masculine person is high on masculine but low on feminine traits while a feminine person is high on feminine but low on masculine traits. An undifferentiated masculine is lower on both masculine and feminine traits but still higher on masculine traits while an undifferentiated feminine is low on both masculine and feminine but still higher on feminine than masculine traits (Santrock, 2008).

The Bem Sex Role Inventory measures how gender schematized an individual is. Those who scored highly on the masculine or feminine scale were considered gender schematic meaning that they used gender to organize information or interpreted things along gender lines, while those who were androgynous were considered gender aschematic (Stets & Burke, 2000). Androgynous people were originally defined as more flexible and more mentally healthy than masculine individuals, while undifferentiated individuals were thought to be weak. In each context, the gender identity, which is most adaptive or desirable, is defined (Santrock, 2008).

Academically, masculine and androgynous people have been found to have a greater tendency than feminine or undifferentiated individuals to control the outcome of their efforts (Choi, 2004). Among unmarried female undergraduates, androgyny and masculinity were associated with high self-esteem (Kimlicka, Cross & Tarnai, 1983).

Gender schema theory has been widely applied in several fields including the field of architectural education. Lemkau (1983) discovered that female administrators in schools of architecture were often androgynous in nature. Bem however has continued to advocate that socialization should be gender aschematic to avoid perpetuation of gender stereotypes that would limit the choices of individuals. Pleck (1993) on the other hand advocated gender role transcendence, an alternative to androgyny, which holds the opinion that an individual should be conceptualized on his own basis rather than along gender lines. Hoffman and Borders (2001) attest to the validity and continued relevance of the Bem Sex Role Inventory.

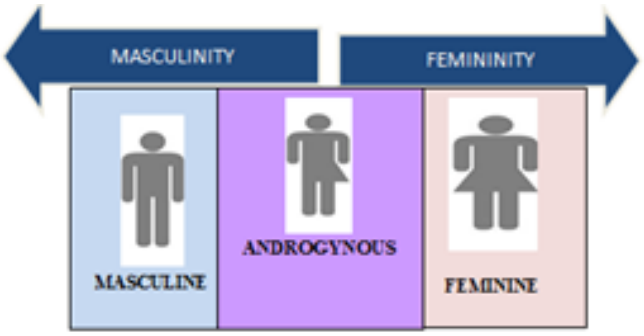

Figure 2.1: Three Gender Identities
Source: Adapted from Stets & Burke (2000)

In groups composed of two major social or cultural divisions especially gender, the characteristics of the more dominant in terms of number have been found to prevail. Kanter (1977) identified four types of groups in this regard to include, uniform groups, skewed groups, tilted groups and balanced groups. Uniform groups comprised only one social category. Skewed groups had a proportion between 0:100 and 20:80 with the fewer being tagged tokens and the greater called dominants. Tilted groups were more balanced ranging from 20:80 to 40:60, with the fewer being called minority and the greater called majority. Those having a proportion between 40:60 and 50:50 were balanced groups as shown in Figure 2.2.

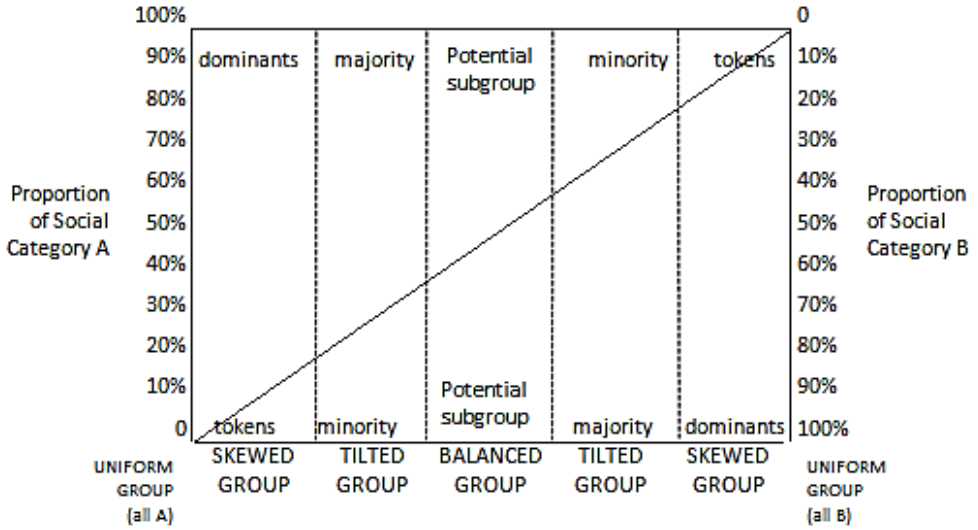

Figure 2.2 Kanter's theory of Group Types
Source: Kanter (1977)

Kanter posited that in skewed groups, the tokens experience visibility, polarization and assimilation. Visibility referred to more awareness, which leads to more pressures for the tokens to perform according to the expectations of the group. Polarization meant that the perceived disparities between the categories were being overemphasized and led to heightening of group boundaries. Assimilation meant that the attributes of the tokens were often assumed to be that of their social category and led to 'role entrapment'. The second group type called the tilted group had the minority group being more powerful than the tokens. The minority members had a kind of alliance among themselves and their individual characteristics have a greater chance to stand out and they have a collective potential to alter the group culture. Corroto (1996) applied this theory to study architectural education and found the females to be in the minority token exhibiting the described characteristics. Beyond the year 2000, however, the group composition in schools of architecture, in some countries, like the United States of America, has attained a balanced status. The status in less developed countries however needs empirical investigation.

2.9 The Learning Combination Inventory and Design Studio Process

The Learning Combination Inventory (LCI) has its roots in the interactive learning models developed by Johnston (2004) which take a position that individual learning takes place using four (4) processes derived from a combination of cognition, conation and affection. Figure 2.3 illustrates the relationship between these three internal qualities likening them to a network of interdependent wheels. This learning

model is unique because it gives feedback to students helping them to build on their learning.

Cognition, which means coming to know is described by psychologists to consist of components like mental sharpness or dullness, memory, range of expectancies and ability to work with abstractions or connections. It basically describes how an individual mentally processes information. Conation describes how an individual performs learning tasks and consists of components like natural skill, pace autonomy personal use of tools and degree of engaged energy. Lastly, affectation describes a development of a sense of self and uniqueness when engaging in learning tasks and its components include feelings, values, individual uniqueness in self-expression and self-confidence. The mind is believed by Psychologist to operate by patterning, a network of internal processes known as 'schema'. Kolb (1984) described schema as patterns of transaction with the world. In neuropsychology, schemas are unconscious encoding or an organization of incoming physiological or psychological stimuli (LCR, 2004; Johnston, 1994).

The Learning Combinations Inventory (LCI) consists of learning patterns, which are interwoven by the three (3) individual threads named before and posits that an individual has his own unique pattern based on his personal characteristics (see figure 2.3). The threads described above are expressed in four (4) patterns. The first of these patterns is Sequential Processing (SP) and is based on sequence and organization. Sequential processing relies heavily on order and consistency. Learners who are high on SP tend to process information step by step, acting according to the rules and enjoy having or taking time to present a neat and complete assignment especially double checking. They are not disposed to rushing to submit an assignment.

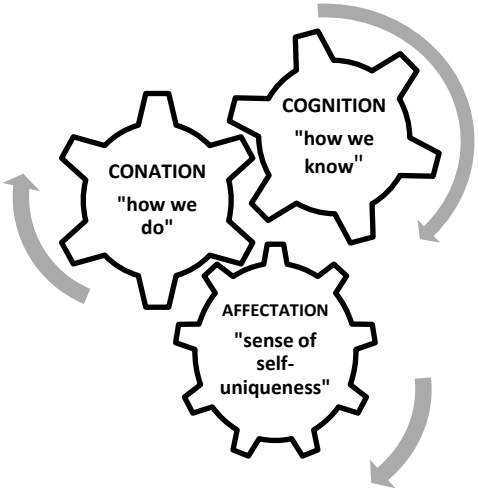

Figure 2.3 Mental Processes from Interactive Learning model
Source : Adapted from LCR (2004)

Learners with high scores in sequential processing are described by Johnston as those that like to carry out learning tasks relying heavily on specific and step by step directions. These learners want to know at every stage what exactly is expected of them and like to stay within the prescribed or defined parameters of any given task. They tend to establish links with previous tasks to find out the order and mode in which the learning task is to be done. They are characterised by doing things neatly and in an orderly manner following a particular laid down format.

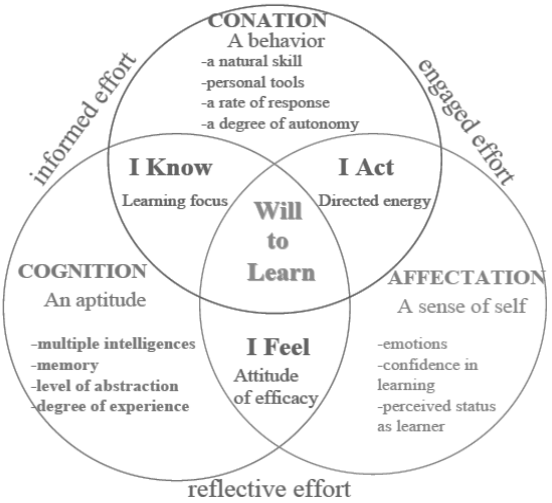

Figure 2.4: The Interactive Learning Model
Source: LCR (2004)

The study of architecture actually involves a lot of sequential processing. The design task of architects often demands that there are logical steps to be followed in arriving at a solution to the design problem often assigned in the architectural studio. Sequential processing comes first to most people in scholarly settings where the instruction is a major component of student learning (Cela-Ranilla & Cervera, 2013). In architectural education, this is likened to what is termed by Salama (2005) as the design process which is as valuable as the product itself. It is also required in design studio as there are established methods or purposive procedures of design problem solving. It has been observed however that students vary in following or relying on instructors established laid down pattern of design problem solving. There are students who by innate disposition rely heavily on the instructor for how to go about the design task and can hardly proceed without reporting to the instructor at each stage for briefing on the next task. The instructor may often need to 'police' such students at every step to keep them on track and ensure they stay within the required limits to deliver the project at the expected time. On the other extreme, there are some 'out of sequence' students who do not intentionally mean to get out of sequence but by nature or style, tend to do things in an out of sequence manner but who eventually get to the solution of the design problem or birth the product arbitrarily without paying attention to the prescribed process. Johnston's let me learn theory acknowledges that we all have different propensity for this processing style.

The second processing pattern is Precise Processing (PP). LCR (2004) describes it as wanting to know details and taking pride in exactness, specificity and responding to details correctly. This comes to play in the school of architecture in courses like building components and methods or structures where first-hand knowledge and precise understanding of details is needed to aid Design. Architectural design is concerned with the knowledge of details and exactness; there is a need for a lot of preciseness especially in the analysis stage of spatial and functional programming. Contact with a lot of data is imminent. Data and information are processed and knowledge of specific materials, their fabrication and assembly is needed. Precise processing is used in the pre-design stage and at detailed design stage without application of precision, design could at best remain a work of art. Adequate representation of materials at appropriate scales is the integral part of architectural

education. Such a person feels fulfilled when he gets feedback earning him recognition. In the school of architecture, this pattern is utilised in courses like building components, specification writing and in the programming requirements in architectural design studio.

The Technical Processing (TP) is concerned with independent, stand-alone or hands-on working autonomously sometimes without pen and paper encumbrance. It is also an integral part of architectural education. In construction, this comes to play in the light of architecture being a course which needs independent and practical design proposals. These proposals are often based on concepts which are generated greatly through stand-alone reasons. In the design studio, learning is often by doing and students are left to figure out solutions to design issues by themselves with guide from tutors. The use of practical/technical reason to figure out how to do things to achieve design by physically demonstrating skills thus comes to play. Few women allude to having this trait as discussed by Marini (1990) except in softer or domestic fields. Schon (1987) calls it reflection in action, while Kolb (1984) describes it as students being involved hands-on with their learning.

Confluent processing, which is the fourth processing pattern is concerned with generating new ideas or thoughts. It deals with creativity in the design studio. According to Johnston (1994), it pulls together all areas of experience and forms them into new ideas and thoughts. This heavily relies on intuition and knowing how to proceed, generating ideas and alternative proposals over and over again. This pattern is particularly employed in generating creative solutions e.g., problem re-examination as described in by Stover (2004).The steps are cyclical and include problem formulation, self-directed learning, problem re-examination, abstraction and inflection. Individuals high on confluent processing tend to love to ‘take risks’ in that they may begin a design without going through the brief or understand the design problem properly. They often need freedom to take a unique approach to problem solving. Johnston (1994) further explained that the blend of these four patterns in varying proportions is what defines an individual’s learning schema. Individuals have varying propensity for the use of each of these patterns which are classified ‘as use first’, ‘use as needed’ and ‘avoid use’. The juxtaposition of these four patterns according to the personal tendency to use them show us what type of learner the

individual is. The number of patterns which an individual uses at each level determines if he is a strong-willed, dynamic or bridge learner. A summary of the characteristics of these learning components is given in figure 2.5.

With careful consideration of the LCI patterns, it was discovered that it follows loosely, the pattern of the process-oriented design studio as defined by Salama (2005).

This process-oriented model involves the breakdown of the design curriculum into precise steps as against the product-emphasized models criticized by Salama (2005) which are run in some contexts of architectural education. Previously, Salama (1995) had argued in favour of a process–oriented design studio that takes into account the how, what and why of a design all in a balanced structure. These criticized models all placed emphasis on the end-product and finished presentations of the design neglecting the process of creating the design and the route taken in the studio to generate such and often highly rewarded the best looking projects not minding how such were evolved (American Institute of Architecture Students, 2003). Salama's model included four (4) major but manageable steps shown in Figure 2.6, which include exploration, analysis of information gathered, interpretation and schematic design. The main goal of this was to enable students understand the design problem in order to empower them to generate appropriate design solutions that meet all the needs of the client and end users of the building.

Sequential Tendencies

- Reviews and revisits directions repeatedly
- Seeks a sample
- Takes time to develop a plan or outline
- Practices and rehearses when studying
- Reorganizes frequently for neatness
- Sticks to the plan or schedule

- May have difficulty *completing* timed tests
- Has trouble "getting started" without the plan
- Spends too much time focusing on directions
- May spend too much time planning, leaving too little time for the task
- Has difficulty deviating from the plan, even when the alternative is better
- Practicing and reorganizing are time consuming

Precise Tendencies

- Double checks for accuracy and additional details
- Capable researcher in seeking additional information or verification of information
- Looks for assurance for accuracy of notes
- Seeks extraneous details to support accuracy

- Double checking is time consuming
- May get *lost in the details* and miss the main issues
- There is never enough information to complete the task comfortably
- Asks too many questions
- Agonizes over every question and response
- Cannot accept that their work is incorrect

Technical Tendencies

- Working independently
- Finds relevance or logical connections in the assignment
- Communicates knowledge better 1 – 1 instead of in writing
- Prefers to construct projects to show skills or knowledge
- Is often the leader in group assignments – problem solver
- Typically has excellent with hands-on learning

- Group work is difficult
- Requires relevance to focus and retain information
- Lengthy written assignments are difficult
- Needs frequent physical activity
- Grades and academic awards are not valued
- Has *no need to share knowledge*
- Difficulty in paying attention to long lectures
- Many assignments seem pointless

Confluent Tendencies

- Often begins and asks for directions later as needed
- Needs freedom to take a unique approach
- Collects many novel ideas before starting
- May start over many times with yet another new idea
- Enjoys early and frequent feedback on novel ideas
- Prefers speech or public performance to writing

- May be on the wrong track from the start
- Rigid requirements create frustration
- Starting over many times takes extra time
- Easily distracted and moves to another task, forgetting to complete items
- Train of thought wanders to related tangents, losing sight of the planned process
- Uses up most of the time generating ideas, leading to incomplete assignments

Figure 2.5: Summary of the Four Processing Patterns of the LCI

(Source: http://www.lib.usf.edu/tutoring/files/2012/01/LCI_Presentation.pdf retrieved on 28/05/2015)

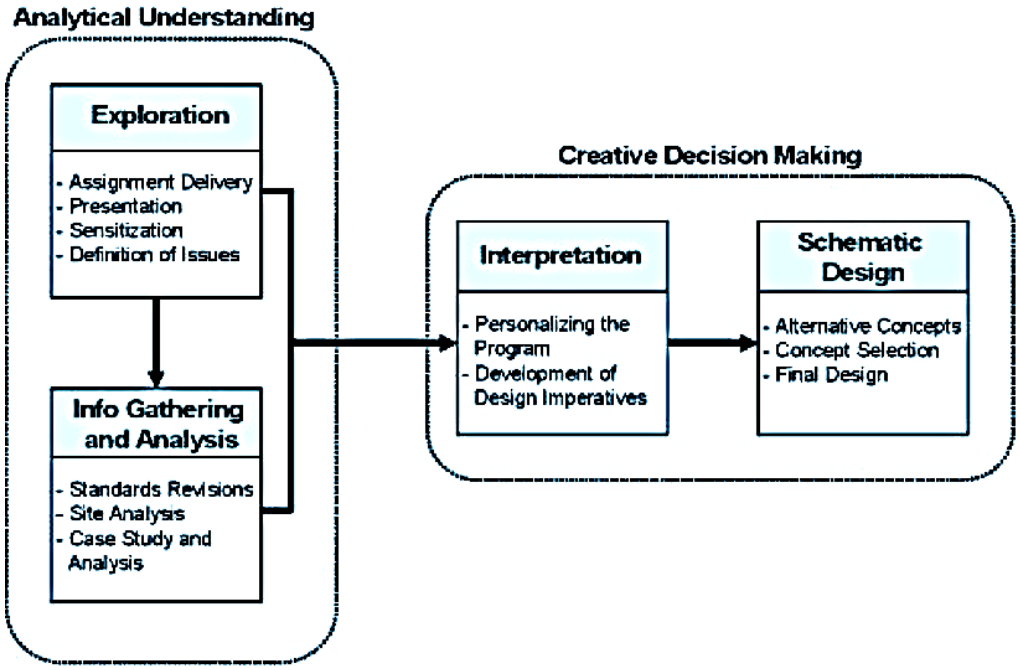

Figure 2.6: Process-Oriented Architectural Design Studio Model
(Source: Salama, 2005)

Design was broken in two (2) segments, the analysis and the decision making stage respectively. In the analysis stage, the students are guided through interpretation of the brief handed to them, understanding the design task at hand and the issues to be addressed by their proposals. This is usually done by way of lectures and brainstorming sessions as highlighted by Salama (2005). The outcome from this stage leads them to stage 2 where they gather information and analyse the information with respect to their own brief. In this stage, case studies of related buildings are often carried out from where they draw lessons on how to or how not to go about their own design proposals. Site analysis is also done at this stage to get familiar with the site and features of the site are often studied and evaluations of how they may influence the design decisions are made. In stage 3, project-specific programming is carried out with the information from the first two stages and used to arrive at the schematic design stage through design decisions which are expressed in the form of alternative solutions.

This model is promoted in the department because it encourages the maximal engagement of the students' capacities for their design. On one hand, step by step analytical thinking is involved and employs the use of facts and scientific principles drawn from all the taught courses like technological and theoretical ones to develop a

program for the design. In the words of Duerk (1993), architectural programming is defined as "the systematic process of gathering and analyzing information about a building or other setting, and then using that information to create guidelines for the performance of that setting." On the other hand, independent creative leaps that may be visually pleasing, technically innovative and breath-taking but lacking functionality or correct parameters are checked by the first segment ensuring a balance in the design work. Salama (2005) further explained this using the split brain theory and was of the opinion that two different but complementary ways of processing information are present in all humans. According to this theory, the right side of the brain produced knowledge through intuition and imagination while the left side produced information through inferential logic. Salama's process utilises the two sides of the brain for each of the analysis and design phases thus maximally utilising the students' faculties. It was observed that this split of the studio process closely fits to an extent, the interactive learning model as shown in Figure 2.7

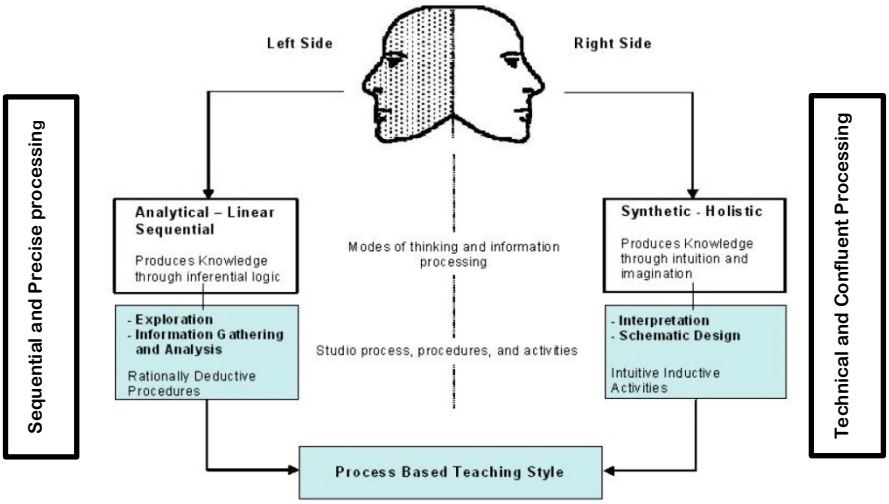

Figure 2.7: Relating Johnston's LCI to Salama's Process-oriented Model
(Source: adapted from Salama, 2005)

Exploring the relationship between the Learning Combination Inventory and the process-oriented studio model shows a great deal of congruence. Sequential and precise processing come to play mostly in the analysis stage while technical and confluent processing which have to do with creativity comes to play in the design stage. This congruence further affirmed why The LCI was judged apt in studying the learning patterns of the students of architecture

2.10 Student Learning Experience in Architecture

This study focused on student experience in architecture based on the thesis of Lueth (2008) who sees student experience in the school of architecture as progressing from one level of study to the other. Lueth (2008) defined students learning experience as perceptions, encounters or situations that students pass through due to their learning in a particular environment such as classrooms, on-campus settings, or off-campus spaces where they study. Lueth's thesis is based partly on the general student development theory by Chickering and Reisser (1993) and the social learning theory as developed by Bandura (1986). Chickering and Reisser (1993) asserted that students pass through seven aspects of development tagged as vectors in the course of their higher education. The first of these vectors is developing intellectual, physical, manual and interpersonal competence, which entails building skills with one's mind. The second one is tagged managing emotions, which involves managing human passions and preventing them from interfering with one's educational processes. The third is moving through autonomy to interdependence. The fourth is developing mature interpersonal relationships. The fifth is establishing identity which involves knowing oneself and accepting or finding comfort and confidence in that identity. The sixth is developing purpose for why one is in the college and involves developing aspirations and goals as distinct from others. The seventh vector is developing integrity for one's belief values and purposes while preserving self-respect and using them to monitor one's behaviour. This theory is often used in higher education to understand the developmental challenges often encountered by students passing through college.

Bandura's social learning theory asserts that interaction with one's environment is essential for learning. A unique feature of this learning theory is the importance it accords self-regulatory capacities. Bandura (1977, p. 13) argued that "By arranging environmental inducements, generating cognitive supports, and producing consequences for their own actions, people are able to exercise some measure of control over their own learning".

Further based on this theory, Powers (2006) studied how students of landscape architecture engaged in self-controlled learning. When applied to the study of architecture, this theory highlights the place of self–engagement in controlling of

available resources and abilities to gain the mastery of the subject matter being taught. Powers (2006) cited six (6) components of social cognitive theory namely, goal use, learning orientations, environmental management, modelling, self-observation processes and self-efficacy, which he found relevant to the design studio. Out of the six, self-efficacy was found relevant to this study since previous studies had found that vocational self-efficacy was the most important motivator of females to enrol in technological fields (Aluede, Imahe & Imahe, 2002; Marra, Rodgers, Shen & Bogue, 2009). Self-efficacy arises when individuals believe that they possess the "capabilities to exercise control over events that affect their lives and beliefs in their capabilities to mobilize the motivation, cognitive resources and the courses of action needed to exercise control over task demand" (Bandura, 1990, p.316). This means that the females in schools of architecture most likely possess or at some time possessed the belief that they could fulfil all or part of what learning in the school of architecture demands. Powers also highlighted four ways in which self-efficacy could affect the behaviour of a learner. The first was in project engagement, which describes the extent to which the learner actively participates in the learning task. The second one is motivation, which refers to the pushful drive with which the individual continues with the learning task as such when difficulty arises, the learner persists. Goal-setting is the third and refers to the specific task attainments which an individual targets per time and finally learning achievement, which refers to the degree of success or failure that a learner scores in specific tasks in the course of his learning. Students with high self-efficacy tend to achieve more.

Lueth (2008) argued that the architecture studio was a unique learning environment different from others. Using the argument of Dutton (1984), which stated that compared to other typical classrooms, studios are active sites where students are engaged intellectually and socially often moving between different tasks and activities ranging from drawing to building models while heavily interacting with others. The uniqueness of the studio had however being heavily criticized (Anthony, 1991; Salama, 2005; Sara, 2002) as being reflexive. This reflexive nature, however is the major distinguishing factor based on problem based learning where the problems tackled are without a particular answer unlike other disciplines, thus students thought brilliant or intelligent in other traditional disciplines may not readily succeed and

thrive in this learning environment. Combining the two theories, Lueth investigated the experiences of a set of fifth-year architecture students as they progressed from their first year through fourth year in the unique social learning environment of the architectural studio. When Bandura's and Chickering's theories were applied to architecture, Lueth (2008) found that learning in architecture studio is self-driven and also achieved through interdependence among the students. It was also discovered that the learning experience as the students progressed from lower levels of study to the higher ones, was transitional. The first and second years in the school of architecture was described by the students as both frustrating and confusing especially, because of their newness to the unique learning environment. The third year was said to be challenging and frustrating, while the fourth year was described as being clear and transitional. The experiential outcomes for the students were described as a collective process where they used previous knowledge to construct future knowledge. Secondly the students said they had developed a creative ability to solve problems, thirdly the study of architecture had helped them to create a vision for what they wanted to do for life and finally based on their personal interests, instructors' persuasion, learning style and physical environment it had helped them to hone their own unique and individual way of learning and working.

2.11 Conceptual Framework of the Study

The purpose of this section is to describe specifically the conceptual stance from which this work was approached. A description of the various theories and education concepts used in the research has been given in the preceding section and in this section the conceptual framework developed for this study was presented explaining the interrelationship of those concepts as explained.

Out of the four feminist theories previously explained, the theories of gender difference and gender inequality (see section 2.7) were chosen to carry out this study. The reason for this adoption was because gender analysis in any context as with the first question asked by feminism will want to investigate if and how the status or experience of females differs from those of males. Moreover, previous research highlighted issues in certain architectural learning contexts, posit that differences exist between the position and experience of male and female students in various schools of

architecture with the females being disadvantaged (Ahrentzen & Groat, 1992; Kurjenoja, 2013).

Also, since gender studies in architectural education is still in an infant stage especially in developing countries of which Nigeria is one, it is apt to approach this study from a gender difference perspective. This will be in line with conceptual approaches used to study gender in education reviewed by Goetz (1988). Furthermore, there was a need to investigate whether the females were equally or unequally situated as the theorists posit (Lengermann & Niebrugge, 2010). Investigation was thus made about the females in the sample to find out if indeed their position, status and situation in the school differed and how different it was from that of their male counterparts. Investigation into the nature of these differences was carried out where it existed and also inquiries into whether these differences were significant enough to place them at a disadvantage or privileged position when compared with their male counterparts. This became necessary since certain African feminists had challenged the applicability of the gender theories prominent in western discourse to the African context (Omonubi-Macdonell, 2003). The study thus investigated gender differences and inequalities in learning and learning outcomes of students of architecture in private universities in Ogun State, Nigeria.

To situate this study within feminists theory of gender difference and inequality according to Lengermann and Niebrugge (2010), it would be argued that "The location in and experience of female students studying architecture in private universities in Ogun state is not only different from that of their male counterparts but is also, also less priviledged"

To investigate this position, a conceptual framework was constructed. Figure 2.8 shows graphically the first element of the conceptual framework for this study. From the figure, it can be seen that students who come to study architecture each have varying demographic, educational and socio-economic backgrounds (cultural capital) described by variables such as their age, ethnicity, gender identity, educational background and motivation to study architecture (Payne, 2015). All these come to bear on the unique setting of the school of architecture especially with regards to the different gender profiles of the student population (see Figure 2.2) in each department of architecture studied. According to the token theory of Kanter (1977), the gender

profile of the departments may be skewed, tilted, balanced or uniform. It is believed that this individual cultural capital together with the gender profile of the department of architecture where they find themselves will influence to a great extent an individual's experience, potential for academic performance and future aspiration. This formed a major concept in this study.

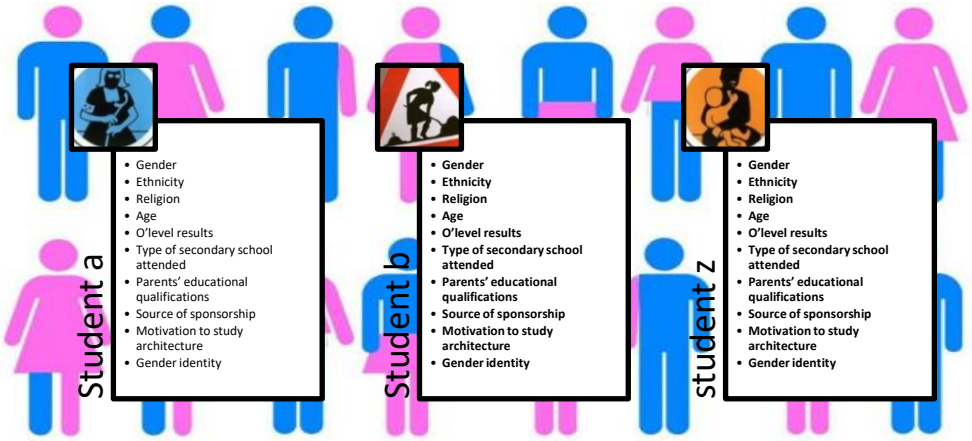

Figure 2.8: Concept of Student background and school gender profile
Source: Author (2014-2016)

The components of the Learning patterns (see Figure 2.9) which describe a student's unique identity form the basis of the second concept in the conceptual framework for this study. It has its roots in Johnston's Interactive Learning Model (Johnston, 1994). This model posits that students possess unique learning patterns which combine to form individual schema, with which they imbibe knowledge in the architectural design studio (Figures 2.3, 2.4 and 2.5). According to the operational manual of this model (LCR, 2004) the Learning Combinations Inventory (LCI) helps to know the unique learning patterns of individual students. Learning patterns have also been found to influence students' experience (Johnston, 2004) in the classroom of which the architectural design studio is a unique type (Lueth, 2006).

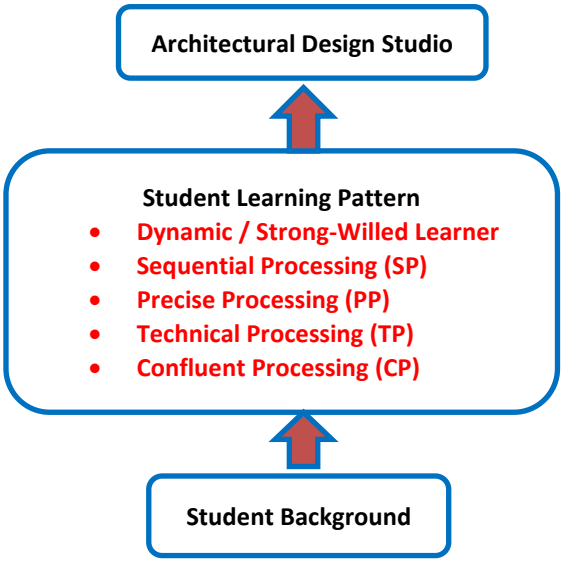

Figure 2.9: Concept of Students' Learning pattern
Source: Author (2014-2016)

Combined with their background personalities, which are gender schematised and unique learning patterns, the students go through the design studio and school of architecture and come out having individual experiences (Lueth, 2008). Also perceptions about gender issues and how it influences studying architecture arise out of these experiences in the school of architecture. (Figure 2.10)

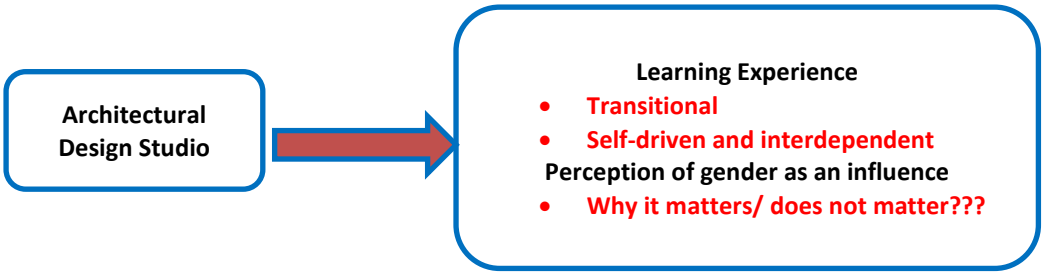

Figure 2.10: Concept of student experience and perceptions of gender
Source: Author (2014-2016)

In the study, the learning experiences and perceptions of the students about gender as an influence to architectural studies were investigated through the lens of gender.. Also the relationship between these and their future aspirations were investigated also through the same lens.

The aim of the research was to investigate the impact and relationship of the students' gender on these concepts individually and their collective interplay on the students' academic performance and future aspirations. The graphical representation of the framework is shown in figure 2.11

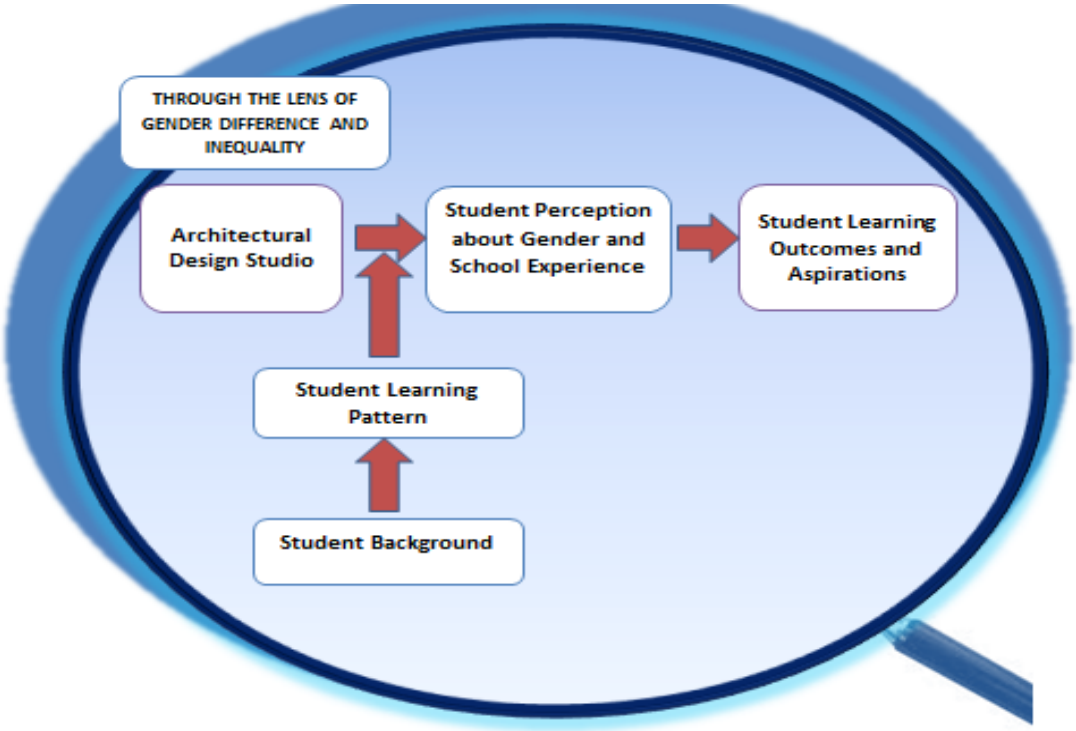

Figure 2.11: Conceptual Framework of This Study
Source: Author (2014-2016)

This chapter contained a review of literature relevant to the subject of this study. The first section contained a review of gender and its influences in higher education before eventually focusing on gender in architectural education and theories underpinning the research. The gaps identified in the existing literature which this study focused on were highlighted. Finally, a discussion of the conceptual approach that was used for this study was included. Explanations of the main concepts employed in this study were presented linking them with architectural education. The diagrams showing the relationship between these variables and how they were investigated were also displayed and explained in this chapter.

CHAPTER THREE

METHODOLOGY

3.1 Research Design

Every research work follows recognized standards and procedures in order to achieve the intended aim and objectives. It must also be able to sufficiently answer the posed research questions. In order to do this, the researcher needs to carefully state and outline the steps, strategies and instruments used to achieve this. This section contains the research design and seeks to describe the plan structure and strategy that was adopted in providing the solution to the research problem at hand. The discussion outlined specific methodology used to achieve each of the outlined research objectives.

The aim of this research was to understand the situation of the female students of architecture in Ogun State Nigeria. The methodology that was employed for this study was the critical method of inquiry (Lather, 2004) comprising the survey method with aspects of case study research. This study was designed as such to give a wide and inclusive coverage of females in the schools of architecture in private universities inthe study area and to align with feminist research principles which have a standpoint of employing a critical method of inquiry into the status of females. This included the use of elements of the survey and the instrumental case study which according to Punch (2005) aims at refining a theory or give better understanding of a particular phenomenon. The phenomenon or subject in this case is that of gender and learning in architectural education, which is yet to be fully and clearly mapped out. Gender and learning in architectural education is yet at a critical and conceptual stage (Sara, 2002) and is in the need of in-depth studies. This can aid the putting forward of propositions, which can be assessed in other situations or contexts in the process of theory building (Punch, 2005; Zainal (2007). They entail an in-depth analysis of a single unit or a small number of units, people, organisations or even institutions with the aim of providing richness and offering depth of insight into a particular situation or phenomenon of interest. This was the reason why elements of the case study methodology were employed in this study. Involvement of narratives is encouraged for feminist research (Gilligan, 1982) because it informs about women and fulfils the purpose of feminism which is to understand or expose the status of women since it

would reveal the specific feelings, opinions and specific experiences which a survey would not capture in an emergent conceptual field. This dovetails into the basic objective of feminism as discussed in the preceding chapter which is to gain deep insight into the experience or status of women thus combining the survey and case study was judged to be the best approach for this study. Thus to properly carry out this study, a broad survey and focussed ethnographic study of private universities offering architecture in Ogun state was carried out.

3.2 Sources of Data

Data for this study were gathered from both primary and secondary sources. Primary data were first sourced from the students of architecture directly through a survey using questionnaires. Also, primary data were obtained by participant observations of students by the researcher as they carried out their learning activities and finally through in-depth interviews. Secondary data were retrieved primarily from departmental archives of student records and results. Where access was not granted to departmental records, the students were relied on to provide such data and information.

3.3 The Study Population

The study population consisted of all students in 200-Level and above studying architecture in privately owned universities in Ogun state Nigeria. There are eleven (11) privately owned universities in the state (see Table 3.1). Situated in South-West Nigeria, Ogun State has a high concentration of privately owned universities. Out of the eleven private universities located in the state, three of them offer architecture as a course of study.

Table 3.1: The Study Population

S/N	University	Year established	Location
1	Babcock University	1999	Ilisan-Remo
2*	Bells University of Technology	2005	Ota
3	Chrisland University	2015	Owode
4	Christopher University	2015	Mowe
5*	Covenant University	2002	Ota
6	Crawford University	2005	Igbesa
7*	Crescent University	2005	Abeokuta
8	Hallmark University	2015	Ijebu Itele
9	Macpherson University	2012	Ajebo
10	Mountain Top University	2015	Mowe
11	South-Western University	2012	Okun Owa

* Universities offering architecture as a course of study
Source: author's compilation

The universities are Covenant University (CU), Crescent University (CRU) and Bells University of Technology (BUT)(see Table 3.1).Covenant University (CU) is a fully accredited Christian Mission University located in Ota. The Bells University of Technology (BUT) is a university without religious affiliations also located in Ota, while Crescent University (CRU) is an Islamic-based institution located in Abeokuta. The schools of architecture in CU and BUT run undergraduate and masters programs in Architecture while CRU as at the time of this research only had an undergraduate program in architecture.

3.4 Sampling Method

For the purpose of the survey, the population comprised all students from 200-Level to MSc 2 in the three schools who were available in the departments at the time of the distribution of the questionnaires and were willing to participate. The 100-Level students were left out because the students were not yet fully involved with the study of architecture and took most of their courses outside the departments. Table 3.2 shows the summary of the sample sizes drawn from each of the universities surveyed. This was obtained by voluntary decision of the students to participate as some students declined stating that they did not wish to participate. The final sample size is shown in Table 3.1

Interviews and participant observation took place only in CU because the researcher had direct access to the daily operations of the institution. For the interview, 40 students were chosen based on their performance. From the spread sheet showing the results of the students, the two (2) highest-achieving and lowest-achieving male and female students in each level of study were chosen for the interviews. This was to ensure that experiences of high-achieving and low-achieving students were captured as employed by Powers (2006). Only students who were willing participated in the narrative writing, with a view to stop as soon as no new theme emerged as recommended by Punch (2005).

Table 3.2: The Study Population and Sample for the survey

University	Population Size	Sample Size
CU	291	277
CRU	68	50
BUT	188	80
TOTAL	547	407

Source: Author's Fieldwork (2014-2016)

3.5. Design of Data Collection Instrument

Four major data gathering instruments were used in this study. These were the questionnaire, the interview schedule, narrative sheets and participant observation guides. The questionnaire consisted of different sections that addressed the various research questions and objectives outlined at the beginning of the study (seeAppendix 2). The first part consisted of a combination of open and closed ended questions and Likert scale items gathering data on the socio-economic characteristics of the respondents. The next section consisted of the adult education form of the Learning Combination Inventory (LCI) developed by the Christine Johnston and Gary Dainton (LCR, 2004) and Bem Sex Role inventory (BSRI) by Bem (1977) both standardised questionnaires used in getting data about the learning patterns and gender identities of the students respectively. An in-depth interview guide (Appendix 3) was prepared for the interview sessions and used to interview the students. In all, 35 students (16 male and 19 female students) showed up for the interview. There was no need to carry out more interviews as suggested by Punch (2005) because the data had reached a point of saturation where new themes were not showing up. The narrative sheet was a plain piece of paper with the topic of narration written on it (Appendix 4).

3.5.1 Research Reliability and Validity Tests

Validity and reliability are two words that are most vital in research design, methodology, results and findings. This is understandable for a number of reasons. First, validity measures the degree to which a measuring device is able to measure what it is actually designed for. Secondly, reliability in research is the possibility of a research design to produce the same result over and over again provided what is being measured does not change. Therefore, to ensure validity and reliability of the research findings some measures were adopted. First, proper design and pre-testing of data

collection instrument in a pilot survey of 12 students was carried out. This enabled the researcher to fine tune the questionnaire and to recode several of the items. Some items that were previously confusing were rephrased and some items were removed because it was found that they were irrelevant. Secondly, Cronbach's alpha test of the scale of measurements used in the questionnaire was conducted before analysis commenced. The reports are given in the descriptions of each objective's section.

3.6. Data Collection and Treatment

The data were collected between February 2014 and April 2016. The questionnaires were administered to all the students available. In CU, some students were not available to complete the questionnaire. Some of the spill over students who were repeating 400-Level could not be reached because they were not available in the school since most of them were taking only few courses. Some students declined stating that they did not wish to participate in the survey. For CRU and BUT, some students also declined and they were not compelled to participate. BUT had the lowest response rate as not many students were available to complete the questionnaire at the time the researcher visited the schools and many who collected the questionnaire failed to return it. The questionnaire administration was a combination of self-effort and that of field assistants appointed for that task. The response rates are shown in Table 3.3.

Table 3.3: Response Rates to Survey

Responses/ University	Sample size Total	Response Rates Male N (%)	Female N (%)	Total N (%)
CU	277	176 (71.3)	71 (28.7)	247 (85.5)
CRU	50	40 (83.3)	8 (16.7)	48 (96.0)
BUT	80	36 (67.9)	17 (32.1)	53 (66.3)
Total	407	252 (72.4)	96 (27.6)	348 (85.5)

Source: Author's fieldwork (2014-2016)

Interviews and participant observation took place only in CU because the researcher had direct access to the daily operations of that institution. For the interview, 35 students (16 male and 19 female students) showed up. There was however no need to carry out more interviews because the data had reached a point of saturation as suggested by Punch (2005) where no new themes were showing up. As many students as were willing were asked to participate in the narrative writing with a view to stop

as soon as no new theme emerged. Narratives were gathered from a total of 39 students (4 with gender unspecified, 18 males and 17 females). The observation was done by the researcher continuously over a period of 3 academic sessions and in various classroom sessions. Sometimes the researcher spent between eight and ten hours (the whole day) in the studio/classroom area observing the students based on the aim of the research, interacting with them formally and sometimes informally and taking notes based on the observations made. The treatment of the data is explained in the next section and the results were presented systematically both disaggregated according to school and aggregated collectively. To make it easier to understand, it was explained according to the objectives of the study.

3.6.1 Objective1-Personal and Gender Characteristics of Students

The data for this objective were collected using section 1 of the questionnaire. The data collected included general demographic information and delved into the background information of the students. Data such as how they came to study architecture and factors contributing to gender identity were extracted from the students.

The instrument used to collect data to identify gendered identities was the Bem Sex Role Inventory test (BSRI) developed by Sandra Bem (Bem, 1981) to measure an individual's level of masculinity or femininity. It is composed of 60 traits or attributes of which 20 each were judged to be feminine, masculine or neutral respectively and respondents are required to rate themselves on a Likert scale of 1-7. 1 was labelled always or almost always true and 7 labelled never or almost never true. It has been judged empirically sound with high test-retest reliability (Bem, 1981) and is one of the most popular instruments used to measure gender identities. Hoffman and Borders (2001), Oswald (2004) and Stets and Burke (2000) attest to the validity and continued relevance of the Bem Sex Role Inventory. In this study, it was discovered that some students omitted certain items, hence their Bem score could not be computed and they were omitted from analysis requiring gender identity. For the Bem Sex Role inventory test, the standardised method called the hybrid method of scoring by Bem (Hoffman & Borders, 2001) of treating the responses was used**.** The corresponding score for each item was placed beside the item and each item was successively placed in 6 rows. 2 rows each contained masculine, feminine and neutral traits respectively. The

sum of the scores of the feminine traits was subtracted from the masculine traits and the results were compared to the androgyny scale shown in Figure 3.1 which is an adaptation of what obtained in Stets and Burke (2010) to show the individual's gender identity. The resulting score was then used to place individuals in one of 3 groups ranging from masculine, to androgynous and feminine and cross tabulated with the students gender to investigate for significant relationships.

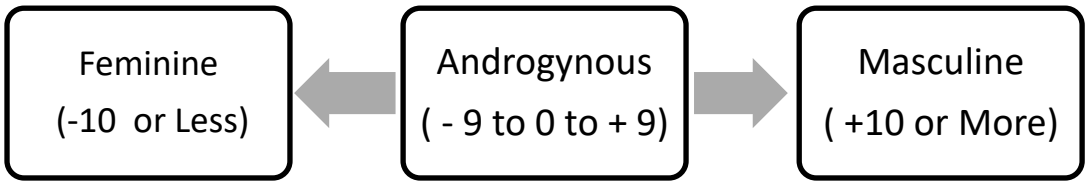

Figure 3.1: The Androgyny Scale
Source: Adapted from Stets and Burke (2000)

The data were analysed through univariate analysis employing frequencies, means and proportions expressed in percentages since the sample contained an unequal number of male and female subjects. Cross tabulations of categorical variables were used to disaggregate the data by gender and gender identity. Chi square tests were used to analyse the gender relationship between variables and these were presented in tables and charts.

3.6.2 Objective 2- Gender and Learning Patterns

To gather data on learning patterns, the adult education form of the Learning Combinations Inventory developed by Learning Connections Resources (2004) was used. It is a standardised questionnaire which has been used to study gender and learning in the design studio (Datta, 2007). Users' responses to 7 items each with Likert-scale answers of 1 to 5 are used to describe one's tendency to act in various ways on 4 subscales (28 items in all). The sub-scales of sequential, precise, technical and confluent processing individually and together define the learning patterns of an individual. Cronbach alpha tests for the data on each learning pattern sub-scale compared favourably with prior studies as shown in Table 3.3.

Table 3.3: Reliability Test of LCI Learning Patterns Scale

LCI Patterns	Cronbach's Alpha Value for Various Studies: Prior Studies			Present study	
	Prior study 1*	Prior study 2**	CU	CRU	BUT
Sequential	.65	.67	.60	.67	.56
Precise	.58	.57	.61	.74	.63
Technical	.85	.74	.70	.64	.76
Confluent	.55	.56	.56	.60	.49

*Johnston and Dainton (2005)
** Cela Ranilla and Cervera (2011)

Pallant (2010) noted that for scales having less than 10 items, it is common for the Cronbach alpha values to be lower, so the low scores were judged normal since each sub-scale had 7 items each and the values obtained were close to the prior studies, the validity was accepted.

The data were analysed by summing up the values for each subscale and presented in tables as generated from the LCR manual (LCR, 2004). Gender and gender identity disaggregated frequencies and means were calculated. These means were compared using Kruskal Wallis and Mann Whitney U tests as carried out by previous studies and were compared and validated by frequencies of items from the written section of the questionnaire. Chi-square tests and cross-tabulations were also used to explore gender and relationships between categorical variables

3.6.3 Objective 3- Gender and School Experiences

To gather data for this objective, first, the questionnaire was used and then the semi-structured in-depth interview was employed. Once identified for interviewing based on the sampling method, the students were informed verbally of the researcher's intention and on agreeing a suitable time was scheduled. Most of the interviews took place in the evening (5.00- 7.00 p.m.) when the students were done with their day's work between 5 to 7.00 p.m. A total of 35 out of 40 purposed interviews were conducted each lasting for 30 minutes on average though some extended to 40 minutes based on the responsiveness and willingness of the students to talk. Prior to this, some pilot interviews had been conducted to test the interview schedule.

At the commencement of each interview, as suggested by Fontana and Frey (1994), for interviews for feminist research, there was a conscious attempt to minimise status difference between interviewer and respondent to facilitate self-disclosure. There was

also attempt made to gain the trust of the respondent by making the setting as informal as possible to gain greater range of responses and richer data. This was achievable as much as possible though some students were more open to speak than others. The purpose of the interviews was explained to the students and they were assured of anonymity and confidentiality and that the data would be used strictly for research. Their consent was also sought before voice recordings of the interviews were made. One of the females and four of the male students did not respond to the invitation even after the invitation was extended to them repeatedly. The researcher had the option of replacing those who failed to turn up with the next in line on the sampling frame but this was ruled out as it was discovered on playing back the tape recordings of the interviews that the data was saturated with no new theme being identified. The interview schedule consisted of 8 main questions with several subheads to help guide or suggest directions for probing for gender issues and perceptions. To further capture gender perceptions, other students were asked at random to submit a written narrative on their perceptions about gender from their journey so far in the school of architecture. To facilitate freedom of expression, they were asked to indicate only their genders and level of study. Thirty-nine (39) students (4 with gender unspecified, 18males and 17 females) submitted such narratives.

The method adopted for observation was the unstructured method as described by Punch (2005). The researcher did not use predetermined categories and classifications but this was done in a more natural open ended way as the activities unfolded. As the process progressed, the observation became sharper in focus towards particular issues observed. Observations of classroom interactions, sitting arrangements and normal classroom behaviours especially for the students in focus were made and notes and sketches where necessary were made to record such. This was with a view to enrich and corroborate the data gathered in the interviews. While observing the classroom settings, the reason for reporting in the studio area daily was concealed from the students and the opinion was that the researcher sought out a general place to do some work or was retrieving questionnaires or interviewing students.

The interviews were all repeatedly played back and transcribed, first in summary form and then the researcher went over the notes, scanning for relevant parts. The relevant parts once identified, were fully transcribed. The transcriptions were fully read over

and over again, scanning them for themes and ideas with the aim of reducing the data to manageable sizes. This was done through editing, summarising and grouping the data into related segments in order to make it suitable for display in forms of tables, charts and diagrams to aid and simplify further analysis from which logical conclusions or themes could be drawn. Miles and Huberman (1994) also identified 3 processes or operations which all data reduction and display rely on, namely coding, memoing and developing propositions which were all employed in this analysis. Coding, which entails adding tags, names or labels by means of coloured pens, pencils and specific numbering systems were attached to different identified segments of the transcriptions which shared common meaning called themes (Punch, 2005). This was to facilitate the later gathering and harvesting of the themes. Memoing also proceeded concurrently with the researcher making short notes or write ups about the themes or ideas obtained in the course of the analysis. Finally abstractions and conclusion drawing were carried out while arranging ordering and integrating all these themes and memos to a logical whole to answer the relevant research questions. It is important to note that this analysis of qualitative data on student experience was interrelated with all the other objectives because the qualitative data were used to augment some of the findings of the other objectives.

Four main groups of qualitative data were obtained. The first were those that had to do with the students background and events leading to their coming to study architecture, the second had to do with the students perception of how gender impacted on studying architecture, the third had to do with the students' actual experience in the course of their own study and the fourth had to do with the outcome of this experience or what the experience had done to the student. It was important to note that because the interview was not very structured and because some aspects of the research relied on grounded theory, analysing and sorting the data was a little herculean and had to be done cyclically shifting between all the processes described above for each objective and for each participant comparing responses of all 35 students for specific questions before being able to make any logical conclusion.

In order to be objective, steps to avoid reflexivity and increase credibility, which are key issues in qualitative research (Lueth, 2008) were taken. Reflexivity refers to the fact that social researchers are part of the social world and as such may interpret their

own thoughts rather than the voice of the participants (Punch, 2005). Care was thus taken to ensure that the actual ideas of these participants were interpreted. To increase credibility which is the degree of accuracy with which researchers understand the actor's perspective, peer-debriefing was included. This involved, giving the interview transcripts to a colleague in the department to compare with the themes drawn to ensure a proper interpretation. These conclusions were examined at first overall without minding the biological sex, academic achievement level and gender or learning schema of the respondent and later including these in the description of each respondent not minding whether the experiences matched or fitted with the description for that schema. At some instances, additional observations were carried out or some students had to be called back for follow-up interviews in the course of data analysis to clarify grey areas and to collect additional data which is also in line with the guidelines given by Miles and Huberman (1994) on carrying out qualitative research. In line with the ethics of qualitative research, real names were withheld and pseudonyms used to be able to effectively report and discuss the findings.

3.6.4 Objective 4-Gender and Learning Outcomes

In this study, learning outcomes include student aspiration, student experience, and performance. Data on students' experience and aspirations were obtained partly from questionnaires and partly from interviews. The data on students result were obtained from departmental archives. Where access to the departmental archives was not possible, the students were relied upon to supply such information. Findings onstudent learning outcomes were enriched by the use of the in-depth interviews. Data on such issues about the overall satisfaction of the students with architecture, their role models and their future aspirations were also obtained through the questionnaires and complimented by the open-ended responses giving a mix of quantitative and qualitative data.

Like the previous objectives, the data were analysed through descriptive analysis employing frequencies, means and proportions expressed in percentages since the sample contained an unequal number of male and female subjects. Cross tabulations were also used to disaggregate the data by gender and gender identity and where needed chi-square test was used to analyse the relationship between gender, gender identity and all the variables. Summaries of variables like student scores and grades in

were presented in tables and charts. Also a combination of non-parametric tests like Kruskal Wallis tests and chi-square were used to compare the mean scores of the various genders, and gender identities.

This chapter has explained the methodology that was employed for the study. A survey was carried out using questionnaires and supported by the use of interviews and participant observation. The data collection instruments were the questionnaire, interview schedule and observation notes. Data sources were the students and departmental archives. The data were analysed using frequencies, proportions, percentages, chi-square tests, Kruskal Wallis tests and content analysis.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1. Gender Composition, Students Background and Gender Characteristics

This section features the presentation and discussion of the findings about the gender composition, background and socio-economic status of the students in the Departments of Architecture in the three (3) universities. It was discussed from a gender difference and inequality perspective. Gender difference as explained by Lengermann and Niebrugge (2010) refers to the different experience or situation of women from that of men, while gender inequality refers to the less privileged or unequal location of women relative to men in any situation group or environment where they co-exist. In the first to fourth sections, results of data analysis and findings on gender and how they relate to students' enrolment, students' background and gender characteristics are presented. In the fifth section, these findings are discussed using the theories of Lengermann and Niebrugge as previously described.

4.1.1 Gender and Student Enrolment in the Departments of Architecture

The enrolment data of students into all levels of study in the three schools are shown in a gender disaggregated format in Table 4.1. The table shows the student enrolment by gender as distributed across all levels of study in the three departments. Out of the three departments, CU had the highest proportion of female enrolment.

For CU, out of the 352 students who registered into various levels of study for 2014/2015 academic session, the total female enrolment stood at 101 (28.6%) while that of males was 251 (71.4%) making the organisational structure a tilted group (Kanter, 1995; King, Hebl, George & Matusik, 2010) where the females were a minority. For CRU, out of the total enrolment for that session, 14.1% were female while 85.9% were male making the composition a skewed group where the females were a token and the males the dominants (Kanter, 1995). For BUT, the group composition was tilted with 22% of the students being female and 78% being male. These proportion of male female enrolment fell short of the total average Nigerian University female enrolment of 37.6% in the years between 2008 and 2010 (United States Embassy in Nigeria, 2012) and the parity agenda of the United Nations. In CU and BUT where there were post graduate students, the proportion of females in the undergraduate section differed from that in the post graduate section. For CU, the

proportion of female undergraduates (29.3%) superseded that of the post graduates (24.6%) while the reverse was the case for BUT where the female postgraduate students' proportion (33.3%) was higher than undergraduates (20.1%). The case of BUT seemed to be an anomaly and CU was as expected since it has been found out that women are less likely than males to complete a higher degree in the school of architecture (Corroto, 1996; De Graft-Johnson *et al*., 2003; Niculae, 2012; Vylatcil, 1989).

Table 4.1: Gender and Overall Enrolment in Architecture

Universities	Levels of Study	Male N	Male (%)	Female N	Female (%)	Group Type	Total N	Total (%)
CU	100-Level	37	(60.7)	24	(39.3)	Tilted	61	(100.0)
	200-Level	45	(72.6)	17	(27.4)	Tilted	62	(100.0)
	300-Level	58	(69.0)	26	(31.0)	Tilted	84	(100.0)
	400-Level	62	(77.5)	18	(22.5)	Tilted	80	(100.0)
	MSc 1	19	(67.9)	9	(32.1)	Tilted	28	(100.0)
	MSc 2	30	(81.1)	7	(18.9)	Skewed	37	(100.0)
	Total	251	(71.4)	101	(28.6)	Tilted	352	(100.0)
CRU	100-Level	10	(100)	0	(0)	Uniform	10	(100.0)
	200-Level	9	(70.2)	4	(30.8)	Tilted	13	(100.0)
	300-Level	26	(90.7)	3	(10.3)	Skewed	29	(100.0)
	400-Level	22	(84.6)	4	(15.4)	Skewed	26	(100.0)
	Total	67	(85.9)	11	(14.1)	Skewed	78	(100.0)
BUT	100-Level	37	(84.1)	7	(15.9)	Skewed	44	(100.0)
	200-Level	40	(81.6)	9	(18.4)	Skewed	49	(100.0)
	300-Level	45	(71.4)	18	(28.6)	Tilted	63	(100.0)
	400-Level	37	(86.0)	6	(14.0)	Skewed	43	(100.0)
	MSc 1	15	(68.2)	7	31.8)	Tilted	22	(100.0)
	MSc 2	7	(63.7)	4	(36.3)	Tilted	11	(100.0)
	Total	181	(78.0)	51	(22.0)	Tilted	232	(100.0)
TOTAL	100-Level	84	(73.0)	31	(27.0)	Tilted	115	(100.0)
	200-Level	94	(75.8)	30	(24.2)	Tilted	124	(100.0)
	300-Level	129	(73.3)	47	(26.7)	Tilted	176	(100.0)
	400-Level	121	(81.2)	28	(18.8)	Skewed	149	(100.0)
	MSc 1	34	(68.0)	16	(32.0)	Tilted	50	(100.0)
	MSc 2	37	(77.1)	11	(22.9)	Tilted	48	(100.0)
	Total	499	(75.4)	163	(24.6)	Tilted	662	(100.0)

Source: Author's Fieldwork (2014-2016)

The findings showed a wide disparity between male-female enrolment figures. When compared to the current situation in more developed nations, there was a wide divergence with the schools in this study being at a disadvantage. The gender gap of enrolment into Science, Technology, and Mathematics (STEM) field of courses was reported to have lessened considerably in favour of females in Nigeria (Adeyemi and Akpotu, 2004). More recent research however showed that in fields of environmental sciences like architecture, female enrolment still lagged significantly behind that of males. Fapohunda (2011) found that for 2008/2009 academic session, the total

enrolment of females in environmental sciences programmes in Nigerian universities stood at 22.3%. When compared to the total female enrolment in Nigerian universities across all courses which ranged between 32.1% and 35.4% in the periods from 1999 to 2009, this was even lower indicating gender inequality in enrolment in favour of males among students of architecture in private universities in Ogun state.

This suggests that in Nigeria, societal expectations, roles, attributes and norms still largely influence student enrolment into schools of architecture like many other technology–based courses. Covenant University was found to have the highest proportion of female students (28.6%) in Nigeria among those for which data are available such as Obafemi Awolowo University (26.8%), Ahmadu Bello University (18.2%), Bells University of Technology (22.0%) and University of Jos (15.9%). There was no nationwide school statistics from Nigeria to compare this with, however with the proportion of practising female architects estimated at 2.4% (Allanana, 2013); it showed that there was a wide disparity between gender ratios in student enrolment and professional practice.

4.1.2 Gender, Educational and Socio-Economic Background

(i) Ethnicity, Religion and Age

The students across the three universities were all found to be Nigerian by nationality; however they were of diverse ethnic origins. It was found that their ethnicity spanned across 27 different ethnic groups. The ethnic groups were categorised according to their geopolitical positioning in the country (see Table 4.2). For CU, the geopolitical zone with the greatest representation was the South-West having more than one half of the students (62.1%) originating from there. The other geopolitical zones represented included the South-South, South-East and North Zones (North-East, North-West and North-Central combined) with 17.6%, 12.1% and 8.2% of the students respectively. The ethnic groupings were equally distributed across both genders with similar proportions of males and females enrolled from each geopolitical zone. The chi-square test (χ^2=..712, df = 3, p=.870) however, did not indicate any significant relationship between student ethnicity categories and their gender. For CRU, the Northern region had the greatest representation of students with 79.2% of all the students hailing from there. The southwest zone had 18.8% of the students from there while the remaining students (2.1%) originated from the South-South.

There was no student from the South–East in this department. There was a statistically significant (χ^2=18.36, *df*=2, p=.000) relationship between this distribution and the students' gender. It was interesting to note that 90% of the males compared to 25% of the females in this department originated from ethnic groups in the Northern part of the country while 62.5% of the females as against 10% of the males were of South-Western origins. Only one female accounting for 12.5% of the females and no male student originated from the South-South. The higher population of Northern males found in this school could be attributed to the fact that it is an Islamic-based institution which attracted its students from the Northern part of the country where there is a large concentration of Muslims characterised with more males than females being encouraged to obtain western education. In BUT like CU, the dominant ethnic groups were from the south –west region (59.1%) for both males and females and there was no significant relationship between this and student gender (χ^2=2.29, *df*=3, p=.514). When all three schools were combined, the result of the chi-square test (χ^2=9.98, *df*=3, p=.019) indicated that there was significant relationship between the students' gender and their ethnicity with more females (62.6%) than males (53%) from the south-west and more males (21.3%) than females (8.1%) from the North. Also those from the South–South had a greater proportion of females (20.2%) than males (14.5%).

As to be expected in a Christian mission university with spirituality as one of its core values, 99.3% of the students in CU indicated that they were Christians. The students all professed Christianity and only 1 (.01%) professed otherwise. In CRU which is an Islamic based institution, the greater part (91.1%) of the students indicated that they were of the Islamic faith, while a very small proportion (8.9%) said they were of the Christian faith. This was also to be expected considering the religious affiliation of the school. In BUT which had no religious affiliations, a greater proportion (84.0%) of the students professed Christianity as against 16.0% who said they were Muslims. In all three departments combined (χ^2 =2.579, *df*=1, *p*=.108), and individually (CU: χ^2=.763, *df*=2, *p*=.663; CRU: χ^2=.157, *df*=1, *p*=.692; BUT: χ^2 =.214, *df*=1, *p*=.643), there was no statistically significant relationship between the students' gender and their religion.

Table 4.2: Students' Ethnicity and Religion

Student Characteristics	University	Categories	Student gender						*Chi-Square test*		
			Male		Female		Total				
			N	(%)	N	(%)	N	(%)	χ^2	*df*	*p*
Ethnicity	**CU**	SW	110	(61.1)	49	(64.5)	159	(62.1)	*.712*	*3*	*.870*
		SS	31	(17.2)	14	(18.4)	45	(17.6)			
		SE	23	(12.8)	8	(10.5)	31	(12.1)			
		NE/NW/NC	16	(8.9)	5	(6.6)	21	(8.2)			
	CRU	SW	4	(10.0)	5	(62.5)	9	(18.8)	*18.36*	*2*	*.000*
		SS	0	(.0)	1	(12.5)	1	(2.1)			
		SE	0	(.0)	0	(.0)	0	(.0)			
		NE/NW/NC	36	(90.0)	2	(25.0)	38	(79.2)			
	BUT	SW	18	(62.1)	8	(53.3)	26	(59.1)	*2.29*	*3*	*.514*
		SS	5	(17.2)	5	(33.3)	10	(22.7)			
		SE	5	(17.2)	1	(6.7)	6	(13.6)			
		NE/NW/NC	1	(3.4)	1	(6.7)	2	(4.5)			
	TOTAL	SW	132	(53.0)	62	(62.6)	194	(55.7)	*9.98*	*3*	*.019*
		SS	36	(14.5)	20	(20.2)	56	(16.1)			
		SE	28	(11.2)	9	(9.1)	37	(10.6)			
		NE/NW/NC	53	(21.3)	8	(8.1)	61	(17.5)			
Religion	**CU**	Christianity	196	(99.0)	75	(100.0)	271	(99.3)	*.763*	*2*	*.663*
		Islam/Undecided	2	(.01)	0	(.0)	2	(.01)			
	CRU	Christianity	3	(8.1)	1	(12.5)	4	(8.9)	*.157*	*1*	*.692*
		Islam/Undecided	34	(91.9)	7	(87.5)	41	(91.1)			
	BUT	Christianity	28	(82.4)	14	(87.5)	42	(84.0)	*.214*	*1*	*.643*
		Islam/Undecided	6	(17.6)	2	(12.5)	8	(16.0)			
	TOTAL	Christianity	227	(84.4)	90	(90.9)	317	(86.1)	*2.579*	*1*	*.108*
		Islam/Undecided	42	(15.6)	9	(9.1)	51	(13.9)			

Source: Author's Fieldwork (2014-2016)

Inquiry into gender differences of the student ages yielded mixed findings as shown in Table 4.3. In CU, the ages of the male students ranged from 17 years to 30 years, while that of the females ranged from 17 years to 24 years. In CRU, the age ranges were wider. The males' ages ranged from 19 years to 43 years, while that of the females ranged from 17 to 22 years. In BUT, the males were aged between 17 years and 28 years while the females ages ranged from 17 to 23 years (Table 4.3).When the ages were categorised, the greatest proportion of the students in CU (51.9%), comprising both male (53%) and females (49.3%) were found to have ages ranging from 20 years to 22 years. In CRU, the males (57.1%) were mostly concentrated in the age category, 23 years and above, while females (75%) were mostly aged from 20 years to 22 years of age. In BUT, most males (50%) and females (52.9%) were in the age category of 17 years to 19 years of age. Chi-Square test (CU: χ^2 =4.77, *df*=2, p=.092; CRU: =8.80, *df*=2, p=.012; BUT: =.04, *df*=2, p=.981) result however did not indicate any significant relationship between the gender of the students and these age

categories except in Crescent University where most of the male students (57.1%) aged 23 and above were older than their female counterparts. On the overall, the student age distribution had a significant relationship with their gender as indicated by the Chi-square test result (χ^2 =10.21, *df*=2, p=.006). It was observed that more of the females (42.6%) than males (30.2%) were within the age range from 16 years to 19 years, while more of males (22.6%) than females (8.5%) were 23 years and above.

Table 4.3: Gender and Students' Age

University	Categories	Student gender					Chi-Square test		
		Male		Female		Total			
		N	(%)	N	(%)	N (%)	χ^2	*df*	*p*
	16-19	50	(29.8)	29	(42.0)	79 (33.3)			
CU	20-22	89	(53.0)	34	(49.3)	123 (51.9)	*4.77*	*2*	*.092*
	23 and above	29	(17.3)	6	(8.7)	35 (14.8)			
	17-19	5	(14.3)	2	(25.0)	7 (16.3)			
CRU	20-22	10	(28.6)	6	(75.0)	16 (37.2)	*8.80*	*2*	*.012*
	23 and above	20	(57.1)	0	(.0)	20 (46.5)			
	17-19	16	(50.0)	9	(52.9)	25 (51.0)			
BUT	20-22	12	(37.5)	6	(35.3)	18 (36.7)	*.04*	*2*	*.981*
	23 and above	4	(12.5)	2	(11.8)	6 (12.2)			
	17-19	71	(30.2)	40	(42.6)	111 (33.7)			
TOTAL	20-22	111	(47.2)	46	(48.9)	157 (47.7)	*10.21*	*2*	*.006*
	23 and above	53	(22.6)	8	(8.5)	61 (18.5)			

Source: Author's Fieldwork (2014-2016)

Further investigations into the students' ages, gave more specific results. Man-Whitney U test results indicated that in CU (*U*=4788.5, *p*=.038, *r*=.1), CRU (*U*=42.5, *p*=.004, *r*=.5) and in the three schools combined (*U*=8401.5, *p*=.002, *r*=.2), there were significant gender differences in students ages. In CU, males (*Mdn*=20) were significantly older than females (*Mdn*=20) but the difference was small. In CRU, also, males (*Mdn*=23) were significantly older than females (*Mdn*=20) but unlike CU, the difference was large. Overall also, the males (*Mdn*=21) were also significantly older than the females (*Mdn*=20) with a small difference (see Table 4.4).

(ii) Students' Educational Background

When the type of secondary school attended by the students was investigated, the findings (see Appendix 4) showed that the greater proportion of the students in CU (88.3%), CRU (59.5%) and BUT (76%) attended co-educational institutions. Looking at this distribution along gender lines, it was discovered that the department with the highest number of female students from single-sex institutions was CU with 21.1% of them from single-sex secondary schools.

Table 4.4: Gender and Students' Average Age

University	Student gender	age by end of this year N	Mean	SD	Median	*Man-Whitney U*	*Z*	*p*	*r*
CU	Male	167	20.71	1.939	20.00	*4788.5*	*-2.702*	*.038*	*.1*
	Female	69	20.12	1.595	20.00				
	Total	236	20.54	1.862	20.00				
CRU	Male	32	22.44	2.047	23.00	*42.5*	*-2.920*	*.004*	*.5*
	Female	8	19.88	1.458	20.00				
	Total	40	21.92	2.188	22.00				
BUT	Male	30	19.70	1.784	19.00	*397.5*	*-.237*	*.813*	*.0*
	Female	17	19.59	1.805	19.00				
	Total	47	19.66	1.773	19.00				
TOTAL	Male	229	20.82	2.062	21.00	*8401.5*	*-3.140*	*.002*	*.2*
	Female	94	20.00	1.620	20.00				
	Total	323	20.58	1.977	20.00				

Source: Author's Fieldwork (2014-2016)

For the males, CRU had the highest proportion of males (47.1%) from single-sex backgrounds. Only in CU was this statistically significant as shown from the Fisher's exact test result (CU: p=.007; CRU: p= .114; BUT: p=.292). (See table 4.5)

Further investigation into the academic backgrounds involved finding out if their O'level scores had any relationship with their gender. The entry O level scores of the students in the relevant subjects are discussed. Apart from English language, the approved subjects in which candidates must obtain at least a credit level pass for entry into the course of architecture include Mathematics, Physics and any of Geography, Technical Drawing or Fine Arts.

The students however seemed to have a specific preference with varying combinations for Mathematics, English Language, Geography, Physics and Technical Drawing. The summary of the grades obtained by these students in those subjects are presented in gender disaggregated format in Appendix 4. From Table 4.5, it can be seen that out of all these subjects, only the grade obtained in Geography amongst the students from CRU was found to have a significant relationship with the students' gender (p=.036). The implication of this is that both the male and female students in all three departments had equal academic potential to study architecture.

Table 4.5: Gender and Students' Educational Background

Background Variables by University		Categories	Student Gender			*Fishers Exact Sig. (2-sided)*
			Male N (%)	Female N (%)	Total N (%)	
Type of secondary school attended	**CU**	Single Sex Institution	13 (7.7)	15 (21.1)	28 (11.7)	*.007*
		Co-Educational	155 (92.3)	56 (78.9)	211 (88.3)	
	CRU	Single Sex Institution	16 (47.1)	1 (12.5)	17 (40.5)	*.114*
		Co-Educational	18 (52.9)	7 (87.5)	25 (59.5)	
	BUT	Single Sex Institution	10 (29.4)	2 (12.5)	12 (24.0)	*.292*
		Co-Educational	24 (70.6)	14 (87.5)	38 (76.0)	
	TOTAL	Single Sex Institution	39 (16.5)	18 (18.9)	57 (17.2)	*.598*
		Co-Educational	197 (83.5)	77 (81.1)	274 (82.8)	
O Level score in Mathematics	**CU**	A1	44 (24.9)	26 (37.7)	70 (28.5)	*.114*
		B2/B3	73 (41.2)	24 (34.8)	97 (39.4)	
		C4/C5/C6/Less	60 (33.9)	19 (27.5)	79 (32.1)	
	CRU	A1	10 (27.0)	0 (.0)	10 (22.2)	*.224*
		B2/B3	13 (35.1)	5 (62.5)	18 (40.0)	
		C4/C5/C6/Less	14 (37.8)	3 (37.5)	17 (37.8)	
	BUT	A1	5 (15.6)	1 (6.7)	6 (12.8)	*.248*
		B2/B3	14 (43.8)	11 (73.3)	25 (53.2)	
		C4/C5/C6/Less	13 (40.6)	3 (20.0)	16 (34.0)	
O Level score in Geography	**CU**	A1	82 (47.7)	27 (44.3)	109 (46.8)	*.903*
		B2/B3	60 (34.9)	23 (37.7)	83 (35.6)	
		C4/C5/C6/Less	30 (17.4)	11 (18.0)	41 (17.6)	
	CRU	A1	5 (15.2)	4 (57.1)	9 (22.5)	*.036*
		B2/B3	17 (51.5)	3 (42.9)	20 (50.0)	
		C4/C5/C6/Less	11 (33.3)	0 (.0)	11 (27.5)	
	BUT	A1	9 (40.9)	5 (38.5)	14 (40.0)	*.905*
		B2/B3	8 (36.4)	6 (46.2)	14 (40.0)	
		C4/C5/C6/Less	5 (22.7)	2 (15.4)	7 (20.0)	
O Level score in Physics	**CU**	A1	17 (9.6)	8 (11.4)	25 (10.1)	*.735*
		B2/B3	87 (49.2)	31 (44.3)	118 (47.8)	
		C4/C5/C6/Less	73 (41.2)	31 (44.3)	104 (42.1)	
	CRU	A1	6 (16.2)	0 (.0)	6 (13.3)	*.116*
		B2/B3	10 (27.0)	5 (62.5)	15 (33.3)	
		C4/C5/C6/Less	21 (56.8)	3 (37.5)	24 (53.3)	
	BUT	A1	2 (6.3)	1 (6.3)	3 (6.3)	*.884*
		B2/B3	17 (53.1)	10 (62.5)	27 (56.3)	
		C4/C5/C6/Less	13 (40.6)	5 (31.3)	18 (37.5)	
O Level score in Technical Drawing	**CU**	A1	48 (32.9)	14 (25.0)	62 (30.7)	*.544*
		B2/B3	71 (48.6)	30 (53.6)	101 (50.0)	
		C4/C5/C6/Less	27 (18.5)	12 (21.4)	39 (19.3)	
	CRU	A1	1 (5.3)	1 (33.3)	2 (9.1)	*.227*
		B2/B3	4 (21.1)	1 (33.3)	5 (22.7)	
		C4/C5/C6/Less	14 (73.7)	1 (33.3)	15 (68.2)	
	BUT	A1	3 (12.0)	5 (41.7)	8 (21.6)	*.176*
		B2/B3	14 (56.0)	4 (33.3)	18 (48.6)	
		C4/C5/C6/Less	8 (32.0)	3 (25.0)	11 (29.7)	

Source: Author's Fieldwork (2014-2016)

(iii) Parents Educational Qualifications and Sponsorship

Educational qualifications and income level are major components of the socio-economic background (Payne, 2015; Savage *et al.*, 2013). An investigation of these factors helped to further understand the background characteristics of the students being studied. Moreover, parental educational status and types of institution attended has been found to influence career choices of young women and men differently (Baird, 2005; Valbuena, 2011). Investigation was thus made about the educational qualifications of the parents of both male and female students in order to understand which social class the students of architecture came from since Bourdieu (1996) had argued that students of architecture are from elite backgrounds. From cross-tabulating the responses of the students (Table 4.6), certain observations were made. First, it was found out that nearly all fathers (93.8%) and a very large portion of mothers (82.6%) of the students in all three schools had at least a university degree indicating the high educational status of the parents. Specifically, a high proportion of the fathers of the students in each of the three schools had at least a master's degree (CU: 71.0%; CRU: 58.4%; BUT: 83.9%). In each of the three schools, not as many mothers (CU: 48.0%; CRU: 13.1%; BUT: 52.1%) were as highly qualified as the fathers. The school with the lowest level of parental educational status was CRU and can be largely attributed to the high concentration of Northern students since it has been observed previously that the Northern part of the country was not as educationally advanced as other parts (Adeyemi and Akpotu, 2004). It can thus be concluded that though the parents generally had a high educational status, student gender did not have a significant relationship with the educational status of either the mothers (χ^2=2.777, *df*=3, *p*=.392) or fathers (χ^2=2.615, *df*=3, *p*=.455) when all the schools were combined or in any of the three schools as can be seen in Table 4.6. This implied that both male and female students in each of the schools came from similar educational backgrounds. Further investigation (Table 4.6) revealed that most of the students in this study were being sponsored by one or both of their parents (CU: 93.9%; CRU: 79.2%; BUT: 94.1%) which called for a relatively high educational status considering the fee level in Nigerian private universities. Out of the three universities, CRU (20.8%) had the highest proportion of students with other sources of sponsorship. There was no significant relationship between the source of sponsorship and student gender either in

any school (CU: p=1.000; CRU: p=.177; BUT: 1.000) or overall (χ^2=1.397, df=1, p=.237).

The monthly allowances of the students were also investigated (see Table 4.6) to shed further light on their economic status. It was observed that most of the students in all the schools (49.8%) earned monthly pocket money in the range between ₦10, 001 to ₦30, 000. Considering the monthly minimum wage of Nigeria fixed at ₦18,000, it could be said that these students were generally financially privileged with a sizeable proportion (44.7%) in category B which could be described as a cash-advantaged situation and a minute proportion in category D (5.4%) described as cash disadvantaged (receiving less than ₦10,000 monthly). Comparing the three schools, they all had the greatest proportion of their populations drawn from category B (CU: 47.9%, CRU: 60.4%; BUT: 49.0%). CRU students appeared to have the least cash advantage because they had the greatest proportion of students in category A (14.6%) compared to CU (3.4%) and BUT (5.9%) and least in category C and D combined (25.1%) when compared to CU (48.7%) and BUT (45.1%). Disaggregation of the data along gender lines was not statistically significant overall (χ^2=2.907, df=3, p=.406) and in each university except for the case of BUT (p=.025) where a greater proportion of females (47.1%) than males (17.6%) were in category C and where a larger proportion of males (61.8%) than females (23.5%) were in category B.

accident and the situation was similar in each of the three schools (Table 4.7). Fisher's exact test outcome revealed that the relationship between the student gender and these circumstances was not significant when the schools were combined (χ^2=4.406, df=1, p=.052) and in any of the three schools (CU: p=.090; CRU: p=1.000; BUT: p=.475). Further investigation showed that overall, the choice to study architecture as revealed by the students was motivated by their love or talent for art, design and creativity (63.7%) given by similar proportions of females (62.0%) than males (64.4%). Admiration for architects and works of architecture and other reasons accounted for the rest (36.3%). Overall (χ^2=.169, df=1, p=.704), and in each of the three schools (CU: p=.765; CRU: p=.706; BUT: p=.328), gender had no significant relationship with the students' choice as shown by the statistical tests. Findings from the interviews however showed that there were more reasons than those given in the survey as the interview elicited more responses.

Table 4.6: Gender and Students' Socio-economic Status

Socio-Economic Status by University		Categories	Student Gender: Male N	Male %	Female N	Female %	Total N	Total %	*Fishers Exact Sig. (2-sided)*
Father's Highst Qualification	CU	OND/HND/Others	8	(4.9)	1	(1.5)	9	(4.0)	*.465*
		1st Degree	38	(23.5)	19	(29.2)	57	(25.1)	
		Master's Degree	92	(56.8)	33	(50.8)	125	(55.1)	
		Ph.D	24	(14.8)	12	(18.5)	36	(15.9)	
	CRU	OND/HND/Others	8	(20.0)	1	(12.5)	9	(18.8)	*.863*
		1st Degree	10	(25.0)	1	(12.5)	11	(22.9)	
		Master's Degree	15	(37.5)	4	(50.0)	19	(39.6)	
		Ph.D	7	(17.5)	2	(25.0)	9	(18.8)	
	BUT	OND/HND/Others	1	(3.0)	1	(6.7)	2	(4.2)	*.881*
		1st Degree	5	(15.2)	2	(13.3)	7	(14.6)	
		Master's Degree	16	(48.5)	6	(40.0)	22	(45.8)	
		Ph.D	11	(33.3)	6	(40.0)	17	(35.4)	
	TOTAL	OND/HND/Others	17	(7.2)	3	(3.4)	20	(6.2)	*.455*
		1st Degree	53	(22.6)	22	(25.0)	75	(23.2)	
		Master's Degree	123	(52.3)	43	(48.9)	166	(51.4)	
		Ph.D	42	(17.9)	20	(22.7)	62	(19.2)	
Mother's Highest Qualification	CU	OND/HND/Others	16	(10.1)	5	(7.8)	21	(9.4)	*.935*
		1st Degree	68	(42.8)	27	(42.2)	95	(42.6)	
		Master's Degree	61	(38.4)	25	(39.1)	86	(38.6)	
		Ph.D	14	(8.8)	7	(10.9)	21	(9.4)	
	CRU	OND/HND/Others	23	(60.5)	2	(25.0)	25	(54.3)	*.160*
		1st Degree	11	(28.9)	4	(50.0)	15	(32.6)	
		Master's Degree	3	(7.9)	2	(25.0)	5	(10.9)	
		Ph.D	1	(2.6)	0	(.0)	1	(2.2)	
	BUT	OND/HND/Others	6	(17.6)	3	(21.4)	9	(18.8)	*.895*
		1st Degree	11	(32.4)	3	(21.4)	14	(29.2)	
		Master's Degree	14	(41.2)	7	(50.0)	21	(43.8)	
		Ph.D	3	(8.8)	1	(7.1)	4	(8.3)	
	TOTAL	OND/HND/Others	45	(19.5)	10	(11.6)	55	(17.4)	*.392*
		1st Degree	90	(39.0)	34	(39.5)	124	(39.1)	
		Master's Degree	78	(33.8)	34	(39.5)	112	(35.3)	
		Ph.D	18	(7.8)	8	(9.3)	26	(8.2)	
Person Responsible for Funding Education	CU	Parents	164	(93.7)	65	(94.2)	229	(93.9)	*1.000*
		Self/Scholarship/Others	11	(6.3)	4	(5.8)	15	(6.1)	
	CRU	Parents	30	(75.0)	8	(100.0)	38	(79.2)	*.177*
		Self/Scholarship/Others	10	(25.0)	0	(.0)	10	(20.8)	
	BUT	Parents	32	(94.1)	16	(94.1)	48	(94.1)	*1.000*
		Self/Scholarship/Others	2	(5.9)	1	(5.9)	3	(5.9)	
	TOTAL	Parents	226	(90.8)	89	(94.7)	315	(91.8)	*.237*
		Self/Scholarship/Others	23	(9.2)	5	(5.3)	28	(8.2)	
Monthly Pocket money	CU	A (Less Than ₦10,000)	8	(4.8)	0	(.0)	8	(3.4)	*.307*
		B (₦10,001 - ₦30,000)	77	(45.8)	35	(53.0)	112	(47.9)	
		C (₦30,001 - ₦50,000)	65	(38.7)	24	(36.4)	89	(38.0)	
		D (Above ₦50,000)	18	(10.7)	7	(10.6)	25	(10.7)	
	CRU	A (Less Than ₦10,000)	7	(17.5)	0	(.0)	7	(14.6)	*.627*
		B (₦10,001 - ₦30,000)	23	(57.5)	6	(75.0)	29	(60.4)	
		C (₦30,001 - ₦50,000)	7	(17.5)	2	(25.0)	9	(18.8)	
		D (Above ₦50,000)	3	(7.5)	0	(.0)	3	(6.3)	
	BUT	A (Less Than ₦10,000)	1	(2.9)	2	(11.8)	3	(5.9)	*.025*
		B (₦10,001 - ₦30,000)	21	(61.8)	4	(23.5)	25	(49.0)	
		C (₦30,001 - ₦50,000)	6	(17.6)	8	(47.1)	14	(27.5)	
		D (Above ₦50,000)	6	(17.6)	3	(17.6)	9	(17.6)	
	TOTAL	A (Less Than ₦10,000)	16	(6.6)	2	(2.2)	18	(5.4)	*.406*
		B (₦10,001 - ₦30,000)	121	(50.0)	45	(49.5)	166	(49.8)	
		C (₦30,001 - ₦50,000)	78	(32.2)	34	(37.4)	112	(33.6)	
		D (Above ₦50,000)	27	(11.2)	10	(11.0)	37	(11.1)	

Source: Author's Fieldwork (2014-2016)

To also find out if the presence of role models influenced the coming to study of architecture, the students were asked if they had male or female architects as parents, family members or friends before coming to study architecture. As can be observed in Table 4.7, for about a third of the students in all 3 schools (33.5%), these close architects were males, 14.6% were females, while over half (51.9%) had none. These proportions varied from school to school but the constant issue was that the known female architects were least and those who had none were the greatest proportion in each of the three schools and overall. There was no statistically significant relationship between these responses and the students gender in any of the three schools (CU: p=.816; CRU: p=.422; BUT: p=.869) and overall (χ^2=1.314, df=2, p=.507). This implied that the fact that known female architects were least or whether the known architect was male or female did not have anything to do with the students' gender.

Table 4.7: Gender and Circumstances of Coming to Study Architecture

		Categories	Student Gender						*Fishers Exact Sig. (2-sided)*
			Male		Female		Total		
			N	(%)	N	(%)	N	(%)	
Choice to study architecture	CU	By Compulsion/ accident	18	(10.3)	13	(18.6)	31	(12.7)	*.090*
		By choice	157	(89.7)	57	(81.4)	214	(87.3)	
	CRU	By Compulsion/ accident	4	(10.0)	1	(12.5)	5	(10.4)	*1.000*
		By choice	36	(90.0)	7	(87.5)	43	(89.6)	
	BUT	By Compulsion/ accident	6	(18.2)	5	(29.4)	11	(22.0)	*.475*
		By choice	27	(81.8)	12	(70.6)	39	(78.0)	
	TOTAL	By Compulsion/ accident	28	(11.3)	19	(20.0)	47	(13.7)	*.052*
		By choice	220	(88.7)	76	(80.0)	296	(86.3)	
Motive for choosing to study architecture	CU	Love/talent for art/design/creativity	113	(64.9)	42	(62.7)	155	(64.3)	*.765*
		Admire architects/architecture/others	61	(35.1)	25	(37.3)	86	(35.7)	
	CRU	Love/talent for art/design/creativity	20	(51.3)	5	(62.5)	25	(53.2)	*.706*
		Admire architects/architecture/others	19	(48.7)	3	(37.5)	22	(46.8)	
	BUT	Love/talent for art/design/creativity	26	(76.5)	10	(58.8)	36	(70.6)	*.328*
		Admire architects/architecture/others	8	(23.5)	7	(41.2)	15	(29.4)	
	TOTAL	Love/talent for art/design/creativity	159	(64.4)	57	(62.0)	216	(63.7)	*.704*
		Admire architects/architecture/others	88	(35.6)	35	(38.0)	123	(36.3)	
Close architect Relation	CU	Father/Known Male/Male Relative	59	(33.9)	21	(30.0)	80	(32.8)	*.816*
		Mother/Known Female / Relative	18	(10.3)	7	(10.0)	25	(10.2)	
		none	97	(55.7)	42	(60.0)	139	(57.0)	
	CRU	Father/Known Male/Male Relative	16	(41.0)	2	(25.0)	18	(38.3)	*.422*
		Mother/Known Female /Relative	9	(23.1)	1	(12.5)	10	(21.3)	
		none	14	(35.9)	5	(62.5)	19	(40.4)	
	BUT	Father/Known Male/Male Relative	11	(31.4)	6	(35.3)	17	(32.7)	*.869*
		Mother/Known Female /Relative	11	(31.4)	4	(23.5)	15	(28.8)	
		none	13	(37.1)	7	(41.2)	20	(38.5)	
	TOTAL	Father/Known Male/Male Relative	86	(34.7)	29	(30.5)	115	(33.5)	*.507*
		Mother/Known Female /Relative	38	(15.3)	12	(12.6)	50	(14.6)	
		none	124	(50.0)	54	(56.8)	178	(51.9)	

Source: Author's Fieldwork (2014-2016)

When probed by interview for how they came to study architecture, the responses of the students varied and showed that they had come to study architecture for different reasons, some of which were single and distinct and some multiple and interesting. The reasons could be grouped by themes and meanings. The themes that emerged from these responses were grouped under five (5) broad headings. These headings include vocational self-efficacy, social persuasion, vicarious experience, constraints into the choice and previous work experience. When the gender of the students was considered, these themes were found to have their own peculiarities. Figure 4.1 shows the summary and sub-summary of those themes according to the students' gender.

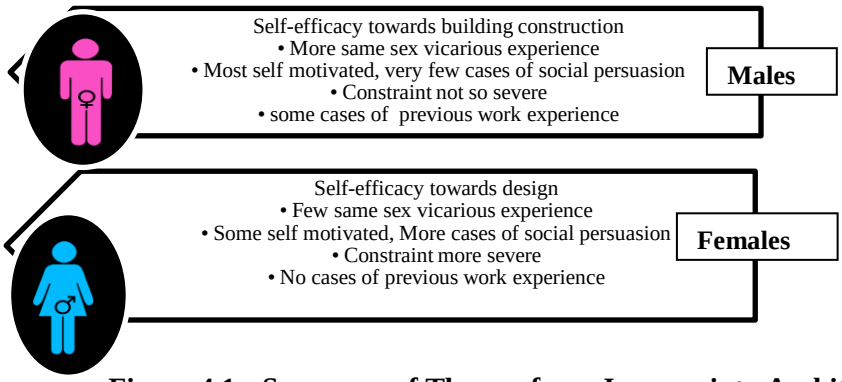

Figure 4.1: Summary of Themes from Journey into Architecture
Source: Author's Fieldwork (2014-2016)

(i) Gender and Vocational Self-efficacy

The first theme that emerged was what can be called a described self-belief in the possession of certain talents skills, desires and abilities. This was tagged as vocational self-efficacy by Aluede *et al.* (2002). Self-efficacy was defined by Bandura (1986) as the belief by an individual in his or her own capability to carry out by organisation and execution specific tasks to reach a particular attainment. Bandura also argued that self-efficacy was a major determinant of the course of action an individual was willing to take and also the amount of effort he would put into it.The responses of the students showed that most of those interviewed came to study architecture because they loved or were good at fine art or technical drawing, geography, mathematics or physics which as one student explained was "all that architecture entails". Some other things which they said they had love or passion for included hand crafts, making things with their hands, designing things from scratch, building construction, and expressing creativity. All those who had succeeded at Technical Drawing in

secondary school, which forms a major inroad into studying architecture had confidence that they would succeed in the field of architecture. This can be explained by the expectancy value theory of Eccles (2009) which posits that choices are often made by individuals due to performance at previous tasks. To put it in the words of Bandura, the students all had high levels of self-efficacy for hands-on tasks as described above of which drawing was the major. This love and passion for creativity and other similar concerns had being found on several occasions to lead several to study architecture. This finding corroborated that of Clegg and Mayfield (1999) and Aluede *et al.,* (2002) who found that among a broader context of design students, a love for hands-on pursuits and exercises in making things and objects held the main source of attraction for them to choose design. The students all believed that when they came to study architecture, they would be availed with ample opportunities to express and develop their creativity in an unlimited manner. This also agreed with Bonsepie (1994) who suggested that design students generally concurred that the main purpose of the course of study was to build on their creativity and with Frith and Horne (1989) who posited that design courses were often characterized by a romantic vision and art school ideology of individual creativity and experimentation. A more critical evaluation of the responses through the lens of gender however revealed gender differences. It was discovered that even though male and female students generally shared this vocational self-efficacy for design, there were gender differences in what the students originally had a passion for. It was observed that the self-efficacy of the females was geared more towards "artistic" (Datta, 2007) or "softer" (Clegg & Mayfield, 1999) concerns. For many females in this study, their self-efficacy was mostly directed towards drawing and hand crafts or creativity expression and design generally like could be seen in those expressed below:

> "…Since I wanted to study architecture before, I decided to apply for architecture, the closest to what I like to do…hand made things, handcrafts"
>
> - (Chioma, female Student, 300-Level)

> "…I wanted to go to the art class… I didn't know about architecture…the reasons, I wanted to be creative, just do stuff with my hands"
>
> - (Marian, female Student, M.Sc. 2)

> "First of all, I like courses that have to do with drawing or drafting like visual arts, so in SS I picked subjects like TD and Visual arts… so I came."
>
> - (Jola, female Student, M.Sc. 1)

> "I like to draw; I've been drawing right since I was in primary school… so when I actually looked into it and I saw the things that were related to architecture I saw that that's actually what I was meant to do"
>
> - (Bomi, female Student, 200-Level)

> "I was very good at drawing and technical drawing. I graduated the best student in those subjects so I decided to go into architecture…I like developing things from scratch."
>
> - (Monica, female Student, M.Sc. 2)

The self-efficacy of the male students on the other hand was directed towards heavier and more seemingly manly things like buildings or building construction as captured in the responses of some of them cited below:

> "I like drawing, it's something I got connected to... I like drawing not just any kind of drawing, I like drawing for a reason, arranging things that kind of thing".
>
> - (Yinka, Male Student, 200-Level)

> "I desired a course that had to do with basically drawing…I grew likeness for construction of objects …"
>
> - (Yele, Male Student, 200-Level, CU)

> "I had a passion for Technical drawing, building drawing especially …I liked playing with Lego and construction of things so I felt that was like a calling…."
>
> - (Kayode, Male Student, 400-Level, CU)

> "…from childhood, I was fascinated with buildings and basic design…I like drawing" - (David, Male Student, M.Sc 2, CU)

> "...I was in need of a career that would afford for expression of my drawing talent. I had also worked on a construction site before coming to school of architecture and I love construction".
>
> - (Tunde, Male Student, 300-Level, CU)

From these responses, it could be seen that the, interest of the students were segregated along gender lines. This finding corroborated that of Clegg and Mayfield (1999) who also found that the passion or interest of the students being studied was polarised along gender lines contributing to the gender difference in the reasons why students come to study architecture.

(ii) Gender and Social Persuasion

The second theme that emerged from the interviews was that there was an influence of someone on the choices of the students. In other words, before the students decided that they were interested in studying architecture or expressed efficacy for it, there was an underlying factor or influence. This influence was either direct or indirect. For some it was not very direct as it came by means of counselling or helping to choose at a moment of confusion, for some it came by leading which can be tagged a socializing into the field of architecture. This influence tagged social persuasion, by Marra *et al*., (2009), was described as the influence of others whether overt or covert on one's course of action. Again a gender difference was spotted in the patterns of social persuasion involvement in the students' journey into architecture. The females mostly seemed to take their decisions with the help of someone either directly or indirectly which was recurrent in their narratives

> "I had a passion for it but it wasn't very serious. My parents wanted me to…they like architecture …"
>
> - (Chide, female student, 300-Level)
>
> "…it was something that, I have always known about but my parents also suggested it. They told me about how wonderful it was, and that was how… I thought it was something nice to try out."
>
> - (Mandy, Female Student, M.Sc2)
>
> "…when I mentioned it … they were always saying it's a very nice course …
>
> - (Chinwe, Female Student, 300-Level)
>
> "Initially I wanted to study art, then my father put me through some lessons and then…"
>
> - (Monica, Female Student, and M.Sc2)
>
> "…and my mum noticed that I was actually good at it so she advised me to study architecture…"
>
> - (Bomi, female student, 200-Level)
>
> "…I wanted to go to the art class…so my dad now called me and explained to me that I can also do that in the science class and through architecture I can also be creative…"
>
> - (Marian, Female Student, M.Sc2)

It was always a case of "My Dad" or "my mum" or "someone said" among the females which was mentioned by only one of the males. This observation agreed with

that of Gilligan (1983) who had found that females tended to make decisions, explain or to recount experiences through the use of relationships with others which is evident here with most females including mothers, fathers, siblings and teachers in the narration of their path into the school of architecture. This tendency of influence through social persuasion among the females also suggests a lower level of independence compared to the males. Eagly, Beall and Sterberg (2004) found that Parents were more likely to make decisions for female offspring than males during adolescence. This was however quite understandable because complexities exist in socialisation processes for female children (Townsend, 2008) in different cultures which could make them more dependent on their parents than males. For example, in a country like Nigeria, Akubue, (2001) explained that fathers and mothers generally tended to be more protective of their daughters than sons thus leaving them to be extremely dependent on and very submissive to their parents' judgements. Scholars like Pizzorno, Benozzo, Fina, Sabato and Scopesi (2014) have also confirmed that there is parental influence in the career choosing process though the extent to which either parent influences the child's career choice is not so clear. What is however clear as found by Aluede *et al.* (2002) and Downing, Crosby, and Blake-Beard (2005) is that social support is of paramount importance in mediating the decision of females to enroll in a science-related field or non-traditional occupations generally. Social support from mentors, siblings and teachers in the form of instrumental aid, information and appraisal described in different forms in the responses of these females all played an instrumental role in their described journey to architecture as distinct and different from that of the male students, who were mostly self-motivated.

(iii) Gender and Vicarious experience

Some of the students reported that they had been drawn to architecture by the influence of a someone who was an architect. For some it was the father or the mother or other relatives. In other words, they had been socialized into the profession of architecture as can be seen in the narratives of these students.

> "oh first my mum is an architect… when I was young I used to follow her to site a lot, so I got used to architecture so I made up my mind I was going to study architecture… I always went to her office to work…to get experience"
>
> - (Bose, female student, 200-Level)

> "My mum is an architect … I used to see her, she had this giant board in the house…. but I was interested from when I used to see her… I got my interest from my mum and from buildings"
>
> - (Lola, female student, 400-Level)

> "I just loved architecture because my cousin's dad was an architect so I loved the way he carried himself and what he actually did, so when I got to SS3…when I was thinking about the course I would love to study… I chose architecture"
>
> - (Yinka, male student, 200-Level)

> "it started when I was in JSS 3, I saw the person that was in charge of the building project in my school at that time. I liked the way he was commanding and so I found out what his occupation was and I was told he was an architect, so I think that was the reason."
>
> - (King, male student, 400-Level)

Marra *et al*. (2009) tagged such a process as vicarious experience and described it as the process of experiencing a task by watching someone else engage in it. This someone is called a role-model and the process is often very successful if the model and the imitator share similar abilities, circumstances and characteristics such as gender. This vicarious experience was observed in the narratives of both male and female students though it was more rampant among the females. Among the females who shared such experiences, more males were cited than females. This is quite understandable because of the fewer female role models, corroborating the finding earlier in this section through the survey where female architects were the least visible as role models.

(iv) Gender and Constraints into Architecture

The fourth theme was similar to the second one and pertained to being constrained into choosing architecture as a course of study. Some of the students in focus were found to have been constrained into studying architecture, meaning that they had little or no choice at all in their enrolment into architecture. The female students in this situation cited compulsion rather than persuasion as the motivation for their choosing to study architecture. One of them said she was compelled by her father who was an engineer against her wish to fulfill his own dream of having a daughter in his own field despite a lack of interest on the daughter's part. In her own words, she said,

> "My dad is an engineer and he kind of wanted me to study his field…. I was supposed to study his field…he deals with buildings… its weird, but my Dad wants me to be an architect"
>
> - (Martha, female student, M.Sc. 2)

The males in this category, found themselves in school of architecture due to the inability to meet the O'level entry requirements for engineering courses which they originally applied for, hence their coming to architecture as a last resort as expressed by one of them below.

> "I initially wanted to study Mechanical engineering… but I failed Chemistry, so I had only the option of architecture and Psychology. I like psychology a lot too but I said let me try something in building and I like to draw and that's why I came for architecture"
>
> - (Dennis, male student, M.Sc. 2)

(v) Gender and Previous experience

The last observed theme for coming to study architecture was previous work or employment experience. Two male students and no female had narrated their coming to school of architecture as influenced by their previous engagement in building construction site work. As explained below:

> "….I was in need of a career that would afford for expression of my drawing talent. I had also worked on a construction site before coming to school of architecture and I love construction".
>
> - (Donald, male student, M.Sc. 2)

> "How I got to study architecture was that I had a little experience of construction site and I loved what I saw…I am naturally a practical person.
>
> - (Tunde, male student, 300-Level)

This was a case of gender difference or inequality defined by social gender roles as society deems it highly inappropriate for a young female of that age to work on a construction site even if the interest is there. However, no female in the study expressed interest in building construction as a motivating factor for studying architecture.

4.1.4 Student Gender Identity

To answer the second research question, from the Bem Sex Role Inventory, the student gender identities for the whole school are distributed as shown in the Table 4.8. In two of the three schools (CRU: 57.8%; BUT: 47.8%) and overall (43.8%), the greatest proportion of the students were androgynous. CU had an equal proportion of

masculine (40.5%) and androgynous (40.5%) students. The feminine made up the least proportion in all schools (CU: 19.0%; CRU: 20.0%; BUT: 15.2%) and also overall (18.6%). It was interesting to note that every group had members of both genders within it. There were cross-sex typed males and females that is, feminine males as well as masculine females. By proportion, there were more Cross sex-typed females (CU: 26.8%; CRU: 25.0%; BUT: 33.3%) than males (CU: 14.6%; CRU: 16.2%; BUT: 6.5%) in every school. When combining all the three schools there were also more masculine females (27.7%) than feminine males (13.8%). The males in CU (46.2%), were mostly masculine while most of those in CRU (62.2%), BUT (54.8%) and in all three schools combined (44.8%) were androgynous. The females in CU (43.7%) and overall (41.5%) were mostly androgynous. Chi-square test revealed a significant relationship between student gender identity and their genders in CU (χ^2=10835, *df*=2, *p*=.004) alone out of the schools and overall (χ^2=14.096, *df*=2, p=.000).

Table 4.8: Students' Gender and Gender Identity

University	Gender Identity Categories	Gender			Pearson Chi-Square Test		
		Male N (%)	Female N (%)	Total N (%)	χ^2	*df*	*p*
CU	Feminine	25 (14.6)	21 (29.6)	46 (19.0)	*10.835*	*2*	*.004*
	Androgynous	67 (39.2)	31 (43.7)	98 (40.5)			
	Masculine	79 (46.2)	19 (26.8)	98 (40.5)			
CRU	Feminine	6 (16.2)	3 (37.5)	9 (20.0)	*2.216*	*2*	*.330*
	Androgynous	23 (62.2)	3 (37.5)	26 (57.8)			
	Masculine	8 (21.6)	2 (25.0)	10 (22.2)			
BUT	Feminine	2 (6.5)	5 (33.3)	7 (15.2)	*5.857*	*2*	*.053*
	Androgynous	17 (54.8)	5 (33.3)	22 (47.8)			
	Masculine	12 (38.7)	5 (33.3)	17 (37.0)			
Total	Feminine	33 (13.8)	29 (30.9)	62 (18.6)	*14.096*	*2*	*.000*
	Androgynous	107 (44.8)	39 (41.5)	146 (43.8)			
	Masculine	99 (41.4)	26 (27.7)	125 (37.5)			

Source: Author's Fieldwork (2014-2016)

These findings implied that the students in these schools of architecture were made up of people who were gender aschematic and gender schematic in the masculine direction. The high proportion of androgynous and masculine students by gender Identity as against feminine showed that architecture is mostly for the tough skinned .This is as expected as architecture has largely been described as masculinist in nature (Ahrentzen & Anthony, 1993; De Graft-Johnson *et al.*, 2003) with only the 'tough-skinned' (Fowler & Wilson, 2004) being able to survive the nature of the study. This was also in accordance with the findings of Lemkau, (1983) and Woosnam (2009)

that females in male dominated fields of study or professions and those who had attained high status in masculine fields tended to demonstrate physical androgynous characteristics

4.1.5 Discussion of Findings

Having disaggregated data quantitatively and qualitatively by gender, certain findings and observations were made which reveal interplay between gender and the basic status of the students of architecture in private university in Ogun state. First, it was seen that there was significant gender inequality in enrolment among students of architecture in private universities in Ogun State. The overall student population was a tilted group where males made up 75.4% and females made up 24.6% of the population. Out of the three schools, CU had the greatest proportion of females, while CRU had the least. Most of these students both male and female hailed from the south western part of Nigeria as was to be expected since the schools were located within that geopolitical zone with variations from one school to another. In CRU however, there was an exception 79.2% of the total enrolment and 90% of the male population coming from the northern region. This high proportion is attributable to the correlation between the Islamic proprietor base of the institution with the prevalence of Islam in the northern part of Nigeria. This factor serves as a motivation for citizens of that zone to enroll in such an institution.

The religious affiliations of the students also matched that of the institution irrespective of student gender with over 90% of students in CU being Christians and those in CRU being Muslims. BUT which did not feature religion as a strong factor in its proprietorship had more Christians also but a less skewed composition along religious lines. Overall, the male students (Mdn=21) were significantly older than the females (Mdn=20) with most males (77.4%) and females (91.5%) aged 22 years and less. The significantly higher ages of the males suggested that females were most likely to enroll in schools of architecture when they were younger, while males could do so even at a more advanced age. At this more advanced age in the field of architecture, females have been reported (Corroto, 1996, De-Graft Johnson *et al*., 2003; Fowler & Wilson, 2004) to have considerably less interest in mainstream architectural concerns. Some of them have been known to deflect to more feminine

friendly fields or pursue starting a family. This could be seen in the fact that the schools that had post-graduate students had lower proportions of females.

Investigating the educational background of the students through the lens of gender revealed no significant differences overall. Most of the students irrespective of gender came from co-educational secondary school backgrounds with mild variations from one university to another. For example in CU a significantly higher proportion of female students than male came from single sex secondary school backgrounds. Academic performance at the O' level exams also indicated no gender difference showing that both male and female students had equal academic potential in all subjects except for very slight differences in one subject in a particular university. A well-established fact was that the students mostly came from backgrounds with high levels of cultural capital. This can be buttressed firstly by the high level of higher academic degrees (masters and PhDs) obtained by both fathers (70.6%) and mothers (43.5%) of the students in the study. Secondly, most (91.8%) of the students were being sponsored by their parents. Thirdly, most of the students are financially comfortable as can be seen from their pocket monies where nearly half of them received pocket monies, which is higher than the minimum wage approved by the Federal Government of Nigeria. This is to be expected because of the high –fee paying status of private universities in Nigeria, which would naturally attract students from such backgrounds. The only gender difference observable in this cultural capital (broader social class description) was that fathers had a higher educational status than mothers, which was a reflection of the norm in the Nigerian society.

Another well-established fact by critical enquiry was that the students came to study architecture because of their love and talent for drawing, building objects, artistic undertakings, previous experience with construction, through the influence of someone and lastly by constraint. There were gender difference with females mostly influenced directly or indirectly by parents or teachers because of the females' perceived love for drawing or handcrafts or to fulfill their own (parents') wishes or dreams and males loving to draw and to turn their drawings into buildings and these choices personally being theirs unlike the females who it seemed were helped into choosing.

The prevalent gender identity among the students was androgynous and masculine accounting for 43.8% and 37.5%, respectively of all students. Being androgynous implied that most of the students were gender aschematic, which means to act or relate with the world along lines that were not consistent with either being male or female. Being masculine on the other hand means that they related with the world in ways and manners consistent with masculine roles or traits. This tendency towards masculinity and being aschematic underscore the disdain for femininity and inclination towards the masculine archetype on which architecture is founded. Overall, there remained gender influences to the gender identity distribution of the students, a much larger proportion of males (41.4%) than females (27.7%) had masculine gender identities and more females (30.9%) than males (13.8%) had feminine gender identities.

In this chapter findings about student enrolment, background characteristics and gender identities of the students in the study area were presented and discussed. The main findings included gender inequality in enrolment, in the high cultural capital of the students' background. Despite this high cultural capital, hints of perpetuation of gender stereotypes were manifest in the parental educational status and in the students' motivation to study architecture. Also the students' gender identities corroborated the masculinist archetype predominance in architectural educational discourse.

4.2. Gender and Learning Patterns

This section reported one aspect of the study which is that of investigating how students come to know. The aim of this was to examine how learning patterns vary by gender among the students of architecture in the study area as outlined by the second objective of this study. Data for this objective were gathered by the use of the adult education form of the Learning Combinations Inventory (LCI) developed by the Learning Connections Resources. To examine how this learning varied by gender among the students of architecture, LCI was administered to the students and the following results were obtained. The LCI describes four distinct learning patterns which are sequential processing (SP), Precise processing (PP), Technical processing (TP) and Confluent Processing (CP). Each of these processing patterns has its own

unique score. The levels of use of these patterns for male and female students as well as three gender identities were presented, analysed and discussed in this section.

4.2.1 Gender and Use of Processing Patterns

The scores of the students in each processing pattern were grouped according to the levels of use as prescribed by Learning Connections Inventory (2004) and described in the methodology section of this study. The frequencies of the students' distribution into these categories by gender are shown in Table 4.9 and by gender identities are shown in Table 4.10.

Table 4.9: Use of Processing Patterns by Students' Gender

Use of Patterns By Universities		Categories of Use	Student Gender Male N (%)	Female N (%)	Total N (%)	*Fishers Exact Sig. (2-sided)*
CU	SP	First,25-35	105 (61.8)	42 (59.2)	147 (61.0)	*.772*
		As needed,18-24/Avoid,7-17	65 (38.2)	29 (40.8)	94 (39.0)	
	PP	First,25-35	94 (55.3)	41 (57.7)	135 (56.0)	*.777*
		As needed,18-24/Avoid,7-17	76 (44.7)	30 (42.3)	106 (44.0)	
	TP	First,25-35	89 (52.4)	20 (28.2)	109 (45.2)	*.001*
		As needed,18-24/Avoid,7-17	81 (47.6)	51 (71.8)	132 (54.8)	
	CP	First,25-35	83 (48.8)	22 (31.0)	105 (43.6)	*.015*
		As needed,18-24/Avoid,7-17	87 (51.2)	49 (69.0)	136 (56.4)	
CRU	SP	First,25-35	20 (55.6)	5 (62.5)	25 (56.8)	*1.000*
		As needed,18-24/Avoid,7-17	16 (44.4)	3 (37.5)	19 (43.2)	
	PP	First,25-35	18 (50.0)	7 (87.5)	25 (56.8)	*.111*
		As needed,18-24/Avoid,7-17	18 (50.0)	1 (12.5)	19 (43.2)	
	TP	First,25-35	13 (36.1)	5 (62.5)	18 (40.9)	*.240*
		As needed,18-24/Avoid,7-17	23 (63.9)	3 (37.5)	26 (59.1)	
	CP	First,25-35	15 (41.7)	5 (62.5)	20 (45.5)	*.436*
		As needed,18-24/Avoid,7-17	21 (58.3)	3 (37.5)	24 (54.5)	
BUT	SP	First,25-35	21 (77.8)	11 (73.3)	32 (76.2)	*1.000*
		As needed,18-24/Avoid,7-17	6 (22.2)	4 (26.7)	10 (23.8)	
	PP	First,25-35	17 (63.0)	7 (46.7)	24 (57.1)	*.347*
		As needed,18-24/Avoid,7-17	10 (37.0)	8 (53.3)	18 (42.9)	
	TP	First,25-35	16 (59.3)	10 (66.7)	26 (61.9)	.746
		As needed,18-24/Avoid,7-17	11 (40.7)	5 (33.3)	16 (38.1)	
	CP	First,25-35	20 (74.1)	8 (53.3)	28 (66.7)	*.193*
		As needed,18-24/Avoid,7-17	7 (25.9)	7 (46.7)	14 (33.3)	
TOTAL	SP	First,25-35	146 (62.7)	58 (61.7)	204 (62.4)	*.871*
		As needed,18-24/Avoid,7-17	87 (37.3)	36 (38.3)	123 (37.6)	
	PP	First,25-35	129 (55.4)	55 (58.5)	184 (56.3)	*.604*
		As needed,18-24/Avoid,7-17	104 (44.6)	39 (41.5)	143 (43.7)	
	TP	First,25-35	118 (50.6)	35 (37.2)	153 (46.8)	*.037*
		As needed,18-24/Avoid,7-17	115 (49.4)	59 (62.8)	174 (53.2)	
	CP	First,25-35	118 (50.6)	35 (37.2)	153 (46.8)	*.037*
		As needed,18-24/Avoid,7-17	115 (49.4)	59 (62.8)	174 (53.2)	

Source: Author's Fieldwork (2014-2016)

Investigation through the lens of gender revealed that for SP and PP, there was no relationship between the students' gender and their distribution into these categories. More than half of the students of both genders in all of the three schools used these patterns at the first level. Concerning TP and CP, there was a significant relationship

between these distributions and the students gender in CU and overall when the three schools were combined. In CU, nearly three-quarters (71.8%) of the females compared to less than one-half (47.6%) of the males avoided using or used TP as needed (p=.001). For CP also, there was a significant relationship with gender (p=.015) with nearly one-half (48.8%) of male students compared to 31.0% of the females using it at the first level. Overall, the use of TP and CP was similar with equal proportions of males and females using them at the first level and as needed. A significantly (χ^2=4.838, df=1, p=.028) higher proportion of males (50.6%) than females (37.2%) used both patterns at the first level while more of the females (62.8%) than males (49.4%) tended to avoid or only use this pattern as needed.

Table 4.10: Use of Processing Patterns by Students' Gender Identity

Use of Patterns* Universities		Categories of Use	Student Gender Identity: Feminine N (%)	Androgynous N (%)	Masculine N (%)	Total N (%)	*Fishers Exact Sig. (2-sided)*
CU	SP	First,25-35	27 (58.7)	62 (63.9)	58 (59.8)	147 (61.3)	*.803*
		As needed,18-24/Avoid,7-17	19 (41.3)	35 (36.1)	39 (40.2)	93 (38.8)	
	PP	First,25-35	24 (52.2)	51 (52.6)	60 (61.9)	135 (56.3)	*.369*
		As needed,18-24/Avoid,7-17	22 (47.8)	46 (47.4)	37 (38.1)	105 (43.8)	
	TP	First,25-35	17 (37.0)	38 (39.2)	53 (54.6)	108 (45.0)	*.046*
		As needed,18-24/Avoid,7-17	29 (63.0)	59 (60.8)	44 (45.4)	132 (55.0)	
	CP	First,25-35	16 (34.8)	39 (40.2)	50 (51.5)	105 (43.8)	*.106*
		As needed,18-24/Avoid,7-17	30 (65.2)	58 (59.8)	47 (48.5)	135 (56.3)	
CRU	SP	First,25-35	5 (62.5)	12 (50.0)	7 (70.0)	24 (57.1)	*.633*
		As needed,18-24/Avoid,7-17	3 (37.5)	12 (50.0)	3 (30.0)	18 (42.9)	
	PP	First,25-35	5 (62.5)	10 (41.7)	9 (90.0)	24 (57.1)	*.036*
		As needed,18-24/Avoid,7-17	3 (37.5)	14 (58.3)	1 (10.0)	18 (42.9)	
	TP	First,25-35	4 (50.0)	9 (37.5)	5 (50.0)	18 (42.9)	*.757*
		As needed,18-24/Avoid,7-17	4 (50.0)	15 (62.5)	5 (50.0)	24 (57.1)	
	CP	First,25-35	4 (50.0)	9 (37.5)	6 (60.0)	19 (45.2)	*.536*
		As needed,18-24/Avoid,7-17	4 (50.0)	15 (62.5)	4 (40.0)	23 (54.8)	
BUT	SP	First,25-35	5 (71.4)	13 (72.2)	12 (80.0)	30 (75.0)	*.897*
		As needed,18-24/Avoid,7-17	2 (28.6)	5 (27.8)	3 (20.0)	10 (25.0)	
	PP	First,25-35	4 (57.1)	8 (44.4)	10 (66.7)	22 (55.0)	*.489*
		As needed,18-24/Avoid,7-17	3 (42.9)	10 (55.6)	5 (33.3)	18 (45.0)	
	TP	First,25-35	4 (57.1)	10 (55.6)	11 (73.3)	25 (62.5)	*.622*
		As needed,18-24/Avoid,7-17	3 (42.9)	8 (44.4)	4 (26.7)	15 (37.5)	
	CP	First,25-35	4 (57.1)	12 (66.7)	10 (66.7)	26 (65.0)	*.914*
		As needed,18-24/Avoid,7-17	3 (42.9)	6 (33.3)	5 (33.3)	14 (35.0)	
TOTAL	SP	First,25-35	37 (60.7)	87 (62.6)	77 (63.1)	201 (62.4)	*.948*
		As needed,18-24/Avoid,7-17	24 (39.3)	52 (37.4)	45 (36.9)	121 (37.6)	
	PP	First,25-35	33 (54.1)	69 (49.6)	79 (64.8)	181 (56.2)	*.046*
		As needed,18-24/Avoid,7-17	28 (45.9)	70 (50.4)	43 (35.2)	141 (43.8)	
	TP	First,25-35	25 (41.0)	57 (41.0)	69 (56.6)	151 (46.9)	*.025*
		As needed,18-24/Avoid,7-17	36 (59.0)	82 (59.0)	53 (43.4)	171 (53.1)	
	CP	First,25-35	24 (39.3)	60 (43.2)	66 (54.1)	150 (46.6)	*.095*
		As needed,18-24/Avoid,7-17	37 (60.7)	79 (56.8)	56 (45.9)	172 (53.4)	

Source: Author's Fieldwork (2014-2016)

For gender identities the situation was a little bit different. Significant relationship with this distribution was found among CU students in TP (p =.046), CRU students in PP (p =.036) and overall in PP (χ^2=6.166, df=2, p=.046) and TP (χ^2=7.365, df=2, p=.025). In CU, more than one-half of the masculine (54.6%) compared to 37.0% of the feminine and 39.2% of the androgynous students used TP at the first level. In CRU, nearly all (90%) of the masculine compared to 62.5% of the feminine and 41.7% of the androgynous students used PP at the first level. Overall, the masculine had the highest proportion of students using PP (64.8%) and TP (56.6%) at the first level.

Table 4.11: Gender and Relative Proficiency in Processing Patterns

University* Student Gender* * Processing Pattern			Friedman Test Statistics				
			Mean Rank	N	Chi-Square	*df*	Asymp. Sig.
CU	Male	SP	2.76	170	11.019	3	.012
		PP	2.48				
		TP	2.43				
		CP	2.33				
	Female	SP	3.02	71	35.987	3	.000
		PP	2.86				
		TP	2.11				
		CP	2.01				
CRU	Male	SP	2.93	36	7.755	3	.051
		PP	2.60				
		TP	2.24				
		CP	2.24				
	Female	SP	2.81	8	5.171	3	.160
		PP	3.13				
		TP	2.25				
		CP	1.81				
BUT	Male	SP	2.72	27	1.207	3	.751
		PP	2.43				
		TP	2.48				
		CP	2.37				
	Female	SP	2.97	15	4.029	3	.258
		PP	2.17				
		TP	2.63				
		CP	2.23				
TOTAL	Male	SP	2.78	233	17.886	3	.000
		PP	2.49				
		TP	2.41				
		CP	2.32				
	Female	SP	2.99	94	37.706	3	.000
		PP	2.77				
		TP	2.21				
		CP	2.03				

Source: Author's Fieldwork (2014-2016)

4.2.2 Gender and Relative Proficiency in Learning Patterns

In order to find out how proficient each gender or gender identity was in each learning pattern, series of tests were carried out. The first test carried out in this section was to find out which of the patterns the male and female students were most proficient in. Friedman's test of differences among correlated measures was conducted. From the test result (See Table 4.11), it was discovered that there was a significant difference in the scores for the four processing patterns for the males ($\chi^2(3) = 11.02$, $p = .012$) and females ($\chi^2(3) = 35.99$, $p = .000$) in CU alone out of the three schools as well as in the scores for males ($\chi^2(3) = 17.89$, $p = .000$) and females ($\chi^2(3) = 37.71$, $p = .000$) overall.

Post–hoc analysis using Wilcoxon signed-rank tests was carried out adopting a Bonferroni correction with a significance level set at p<..0008 was to find out which processing pattern each gender differed in. The outcome of the test (see Table 4.12) showed that in CU, male students were significantly more proficient in SP (*Mdn*=25) than CP (*Mdn*=24) (Z=-3.117, p=.002), while the females were significantly more proficient in SP (*Mdn*=26) than both TP (*Mdn*=23) (Z=-3.785, p=.000), and CP (*Mdn*=23) (Z=-4.504, p=.000), and also in PP (*Mdn*=25) than TP (*Mdn*=23) (Z=-3.054, p=.002), and CP(*Mdn*=23) (Z=-3.576, p=.000). When all three schools were combined, the post-hoc test result indicated that the males were significantly weaker in CP (*Mdn*=25) than in SP (*Mdn*=26) (Z=-4.014, p=.000) while the females were significantly stronger in SP (*Mdn*=26) than TP (*Mdn*=23) (Z= -3.740, p=.000) and

Table 4.12: Wilcoxon-Sign rank Test for LCI Patterns and Gender

	Student gender/Test Statistics[a]		**PP-SP**	**TP - SP**	**CP- SP**	**TP - PP**	**CP - PP**	**CP-TP**
CU	Male	Z	-1.675[b]	-1.391[b]	-3.117[b]	-.317[b]	-1.810[b]	-1.579[b]
		Asymp. Sig. (2-tailed)	.094	.164	.002*	.751	.070	.114
		R	.06	.05	.12	.01	.07	.06
	Female	Z	-1.562[b]	-3.785[b]	-4.504[b]	-3.054[b]	-3.576[b]	-.477[c]
		Asymp. Sig. (2-tailed)	.118	.000*	.000*	.002*	.000*	.633
		R	.09	.22	.27	.18	.21	.03
	a.Wilcoxon Signed Ranks Test b. Based on negative ranks *significant at .008 level							
	Student gender/Test Statistics[a]		**PP-SP**	**TP - SP**	**CP- SP**	**TP - PP**	**CP - PP**	**CP-TP**
Overall	Male	Z	-2.248[b]	-2.460[b]	-4.014[b]	-1.008[b]	-2.214[b]	-1.186[b]
		Asymp. Sig. (2-tailed)	.025	.014	.000*	.314	.027	.236
		R	.07	.08	.13	.03	.07	.04
	Female	Z	-1.794[b]	-3.740[b]	-4.767[b]	-2.684[b]	-3.682[b]	-.191[b]
		Asymp. Sig. (2-tailed)	.073	.000*	.000*	.007*	.000*	.849
		R	.09	.12	.25	.14	.19	.01
	a. Wilcoxon Signed Ranks Test b. Based on positive ranks. *significant at .008 level							

Source: Author's Fieldwork (2014-2016)

Table 4.13: Gender Identity and Relative Proficiency in Patterns

University *Student Gender Identity *Processing Pattern			Friedman Test Statistics				
			Mean Rank	N	Chi-Square	*df*	Asymp. Sig.
CU	**Feminine**	SP	2.96	46	13.090	3	.004
		PP	2.65				
		TP	2.32				
		CP	2.08				
	Androgynous	SP	2.93	97	22.929	3	.000
		PP	2.64				
		TP	2.27				
		CP	2.16				
	Masculine	SP	2.69	97	3.708	3	.295
		PP	2.54				
		TP	2.40				
		CP	2.38				
CRU	**Feminine**	SP	3.19	8	6.616	3	.085
		PP	2.63				
		TP	2.56				
		CP	1.63				
	Androgynous	SP	2.98	24	5.480	3	.140
		PP	2.48				
		TP	2.17				
		CP	2.38				
	Masculine	SP	2.60	10	5.968	3	.113
		PP	3.25				
		TP	2.10				
		CP	2.05				
BUT	**Feminine**	SP	2.79	7	4.180	3	.243
		PP	3.07				
		TP	2.29				
		CP	1.86				
	Androgynous	SP	3.03	18	5.503	3	.138
		PP	2.19				
		TP	2.17				
		CP	2.61				
	Masculine	SP	2.60	15	5.731	3	.125
		PP	2.13				
		TP	3.10				
		CP	2.17				
TOTAL	**Feminine**	SP	2.97	61	21.281	3	.000
		PP	2.70				
		TP	2.34				
		CP	1.99				
	Androgynous	SP	2.95	139	29.379	3	.000
		PP	2.55				
		TP	2.24				
		CP	2.26				
	Masculine	SP	2.67	122	4.745	3	.191
		PP	2.55				
		TP	2.46				
		CP	2.33				

Source: Author's Fieldwork (2014-2016)

CP (*Mdn*=23) (Z= -4.767, *p*=.000) and also in PP (*Mdn*=25), than TP (*Mdn*=23) (Z= -2.684, *p*=.000) and CP (*Mdn*=23) (Z=-3.682 , *p*=.000). The details for these analyses are shown in Table 4.12.

The Friedman test of differences among correlated measures was repeated for gender identities. The result of the test (Table 4.13) revealed a statistically significant difference in the level of use of the patterns among only the feminine ($\chi^2(3) = 13.09$, $p=.004$) and androgynous ($\chi^2(3) = 22.93$, $p=.000$) in CU. When the three schools were combined, the test result also indicated that the androgynous ($\chi^2(3) = 21.28$, $p=.000$) and feminine ($\chi^2(3) = 29.38$, $p=.000$) also were significantly different in their proficiency for the various learning patterns (Table 4.13). The post-hoc analysis tests results shown in Table 4.14 revealed that when the 3 schools were combined the androgynous students, were significantly higher in SP (*Mdn*=26) than TP (*Mdn*=24) (*Z*=-3.716, *p*= .000) and CP (*Mdn*=24) (Z=-4.195, *p*=.000). As for the feminine, they were significantly higher in SP (*Mdn*=26) than TP (*Mdn*=23) and CP (*Mdn*=25). They were also higher in PP (*Mdn*=25) than CP (*Mdn*=23). In CU, the feminine students were significantly stronger in SP (*Mdn*= 25) than TP (*Mdn*= 23) (*Z*=-3.086, *p*= .002)

(Z=-2.632, *p*=.008) and CP (*Mdn*=22.5) (Z=-3.484, *p*=.000) and also stronger in PP (*Mdn*=25) than CP (*Mdn*= 22.5) (Z=-2.889, *p*=.004). In the case of the androgynous students in CU, they were also more proficient in SP (*Mdn*= 26) than TP (*Mdn*= 24) (Z=-2.965, *p*=.003) and CP (*Mdn*=24) (Z=-4.183, *p*=.000) and also stronger in PP (*Mdn*=25) than CP (*Mdn*= 24) (Z=-2.993, *p*=.003).

Table 4.14: Wilcoxon-Sign rank Test for LCI Patterns/Gender Identity

	Student Gender Identity/Test Statistics[a]		PP-SP	TP - SP	CP- SP	TP - PP	CP - PP	CP-TP
CU	Feminine	Z	-1.463[b]	-2.632[b]	-3.484[b]	-1.451[b]	-2.889[b]	-.638[b]
		Asymp. Sig. (2-tailed)	.144	.008*	.000*	.147	.004*	.524
		R	0.1	0.2	0.3	0.1	0.2	0.1
	Androgynous	Z	-1.247[b]	-2.965[b]	-4.183[b]	-2.429[b]	-2.993[b]	-.281[b]
		Asymp. Sig. (2-tailed)	.212	.003*	.000*	.015	.003*	.779
		R	0.1	0.2	0.2	0.1	0.2	0.01

a. Wilcoxon Signed Ranks Test b. Based on positive ranks *significant at .008 level

	Student Gender Identity/Test Statistics[a]		PP-SP	TP - SP	CP- SP	TP - PP	CP - PP	CP-TP
Overall	Feminine	Z	-1.699[b]	-3.086[b]	-4.274[b]	-1.343[b]	-3.631[b]	-1.528[b]
		Asymp. Sig. (2-tailed)	.089	.002*	.000*	.179	.000*	.127
		R	0.1	0.2	0.2	0.1	0.2	0.1
	Androgynous	Z	-2.200[b]	-3.716[b]	-4.195[b]	-2.537[b]	-2.012[b]	-.634[c]
		Asymp. Sig. (2-tailed)	.028	.000*	.000*	.011	.044	.526
		R	0.1	0.2	0.2	0.1	0.1	0.02

a. Wilcoxon Signed Ranks Test b. Based on positive ranks *significant at .008 level

Source: Author's Fieldwork (2014-2016)

4.2.3 Gender and Gender Identity Differences in Processing Patterns

The mean, median, mode and standard deviation of the students' scores in all processing patterns are shown in a gender and gender identity disaggregated format in Tables 4.15 and 4.16, respectively. Taking a cursory look at these tables, some observations were made. It was observed that going by the means and overall, the males scored higher than females (Table 4.15) in all processing patterns except for SP where the reverse was the case. Using the same yardstick for gender identities (Table 4.16), the masculine scored higher than both androgynous and feminine in all processing patterns. The androgynous also scored higher than the feminine in all patterns except for SP where the reverse was the case. It was however observed that the pattern of these scores in terms of gender and gender identity varied from one university to the other either following or deviating from it. Series of statistical tests were carried out to statistically establish or disprove these observations. First of all tests were carried out to compare how the genders or gender identities differed in their use of each pattern. Secondly tests to determine which of the patterns that students having each gender or gender identity were more proficient in was carried out. Finally, the students distribution of learning schema according to the LCI was examined for gender and gender Identity differences.

Table 4.15: Gender and Summary Scores of Processing Patterns

Processing patterns by University		Student Gender							
		Male				Female			
		N	**Mean**	**SD**	**Median**	**N**	**Mean**	**SD**	**Median**
CU	SP	201	25.5	4.02	25.0	76	25.7	4.26	26.0
	PP	201	25.1	3.88	25.0	76	24.8	3.98	25.0
	TP	201	25.0	4.15	25.0	76	22.6	4.79	23.0
	CP	201	24.6	3.45	24.0	76	23.0	3.26	23.0
CRU	SP	40	25.1	4.47	25.0	8	26.3	3.81	27.5
	PP	40	24.4	5.38	24.5	8	27.4	3.34	28.0
	TP	40	23.2	4.61	24.0	8	25.9	3.91	27.0
	CP	40	23.4	4.17	24.0	8	24.9	3.18	25.0
BUT	SP	36	26.8	3.89	27.0	17	26.5	3.42	27.0
	PP	36	25.9	4.34	27.0	17	24.4	2.95	24.0
	TP	36	25.1	5.61	26.0	17	26.0	4.09	26.0
	CP	36	25.7	3.42	26.0	17	24.9	3.28	25.0
TOTAL	SP	277	25.6	4.08	26.0	101	25.9	4.08	26.0
	PP	277	25.1	4.20	25.0	101	24.9	3.83	25.0
	TP	277	24.8	4.44	25.0	101	23.4	4.80	23.0
	CP	277	24.5	3.60	25.0	101	23.5	3.33	23.0

Source: Author's Fieldwork (2014-2016)

Table 4.16: Gender Identity and Summary Scores of Processing Patterns

Processing patterns by University		Student Gender Identity											
		Feminine				Androgynous				Masculine			
		N	Mean	SD	Mdn	N	Mean	SD	Mdn	N	Mean	SD	Mdn
CU	SP	46	25.3	3.90	25.0	98	25.7	4.21	26.0	98	25.7	4.09	25.0
	PP	46	24.3	3.98	25.0	98	25.2	4.05	25.0	98	25.3	3.65	25.0
	TP	46	23.2	4.08	23.0	98	24.0	4.31	24.0	98	25.1	4.71	26.0
	CP	46	22.9	3.13	22.5	98	23.8	3.41	24.0	98	24.9	3.52	25.0
CRU	SP	9	27.6	3.96	29.5	26	24.3	4.27	24.5	10	26.5	4.35	27.5
	PP	9	25.4	5.58	27.5	26	23.5	4.98	24.0	10	28.5	3.78	27.0
	TP	9	25.6	4.17	26.0	26	22.6	4.80	24.0	10	25.0	4.27	24.5
	CP	9	22.5	3.16	23.5	26	23.5	4.30	24.0	10	25.3	3.59	25.5
BUT	SP	7	26.3	3.40	26.0	22	27.1	4.25	27.5	17	26.3	3.48	27.0
	PP	7	25.9	4.41	25.0	22	24.9	4.35	24.0	17	25.4	3.58	25.0
	TP	7	24.9	4.06	25.0	22	24.3	6.33	26.0	17	26.9	3.58	28.0
	CP	7	24.3	3.82	25.0	22	25.9	3.64	25.5	17	25.1	2.81	26.0
TOTAL	SP	62	25.7	3.88	26.0	146	25.6	4.26	26.0	125	25.8	4.02	26.0
	PP	62	24.7	4.22	25.0	146	24.8	4.27	24.0	125	25.6	3.73	26.0
	TP	62	23.7	4.13	23.0	146	23.8	4.69	24.0	125	25.3	4.56	26.0
	CP	62	23.0	3.19	23.0	146	24.1	3.65	24.0	125	25.0	3.42	25.0

Source: Author's Fieldwork (2014-2016)

The result of the Mann-Whitney U test to determine gender differences in processing patterns is shown in Table 4.17. From the table it can be seen that on the overall, out of the four processing patterns, only in TP and CP was there any significant gender differences in the students learning patterns as captured by these scores (table 4.15). The test result indicated that when all the schools were combined, the TP score of the male students (*Mdn*=25.0) was higher than that of the females (*Mdn*=23.0), *U*=9236.500, *p*=.026. Also the CP score of the males (*Mdn*=25.0) was significantly higher than that of the female students (*Mdn*=23.0), *U*=9014.000, *p*=.012. When the respective departments were considered, it was only in CU among all three that there were significant gender differences in processing patterns. Again, the test result (Table 4.17) indicated that the male and female students in CU differed significantly in their TP and CP scores. In TP, the male students (*Mdn*=25.0) scored higher than their female mates (*Mdn*=23.0), *U*=4304.000, *p*=.000. Also in CP, the males (*Mdn*=24.0) scored higher than the females (*Mdn*=23.0), *U*=4443.500, *p*=.001. In CRU, there was no significant gender difference in TP, *U*=92.500, *p*=.115 or CP, *U*=109.000, *p*=.300. Likewise in BUT, no significant gender difference was found in TP, *U*=190.000, *p*=.742 or CP, *U*=165.000, *p*=.322.

Table 4.17: Statistical Tests of Processing Scores and Gender

University	Test Statistics	SP	PP	TP	CP
CU	Mann-Whitney U	5857.500	5893.500	4304.000	4443.500
	Wilcoxon W	20392.500	8449.500	6860.000	6999.500
	Z	-.361	-.288	-3.518	-3.239
	Asymp. Sig. (2-tailed)	.718	.774	.000	.001
CRU	Mann-Whitney U	122.000	89.000	92.500	109.000
	Wilcoxon W	788.000	755.000	758.500	775.000
	Z	-.672	-1.679	-1.575	-1.069
	Asymp. Sig. (2-tailed)	.502	.093	.115	.285
	Exact Sig. [2*(1-tailed Sig.)]	.520[b]	.098[b]	.119[b]	.300[b]
BUT	Mann-Whitney U	183.500	160.500	190.000	165.000
	Wilcoxon W	303.500	280.500	568.000	285.000
	Z	-.502	-1.108	-.329	-.990
	Asymp. Sig. (2-tailed)	.616	.268	.742	.322
TOTAL	Mann-Whitney U	10557.000	10849.000	9236.500	9014.000
	Wilcoxon W	37818.000	15314.000	13701.500	13479.000
	Z	-.511	-.132	-2.221	-2.513
	Asymp. Sig. (2-tailed)	.609	.895	.026	.012

a. Grouping Variable: Student gender
b. Not corrected for ties.
Source: Author's Fieldwork (2014-2016)

Gender identity scores for all processing patterns were statistically tested for differences using a Kruskal-Wallis test. The result of the test is shown in Table 4.18. The test result indicated a statistically significant gender identity difference in some patterns both overall and in two out of the three schools. Overall, there were statistically significant differences in TP and CP. In TP, (H (2) =8.691, p=.013). As shown in Appendix 8, the masculine scored significantly highest with a mean rank of 180.98, followed by the androgynous with a mean rank of 150.63 and the feminine with a mean rank of 147.33. In CP (H(2)=12.065, p=.002), the hierarchy was also the same with the masculine scoring highest with a mean rank of 180.59, followed by the androgynous with a mean rank of 158.26 and the feminine having the least with a mean rank of 130.70.

Table 4.18: Statistical Test of Processing Scores and Gender Identity

University	Test Statistics	SP	PP	TP	CP
CU	Chi-Square	.487	1.810	6.357	10.111
	df	2	2	2	2
	Asymp. Sig.	.784	.404	.042	.006
CRU	Chi-Square	4.286	7.438	2.686	2.715
	df	2	2	2	2
	Asymp. Sig.	.117	.024	.261	.257
BUT	Chi-Square	.593	.407	2.249	.764
	df	2	2	2	2
	Asymp. Sig.	.743	.816	.325	.682
TOTAL	Chi-Square	.104	3.153	8.691	12.065
	df	2	2	2	2
	Asymp. Sig.	.949	.207	.013	.002

a. Kruskal Wallis Test
b. Grouping Variable: Student Gender Identity
Source: Author's Fieldwork (2014-2016)

In CU the trend was also similar to the previous with significant gender identity differences found in TP (H (2) = 6.357, *p*=.042) and CP (H (2) =10.111, *p*=.006) and the masculine scoring the highest followed by the androgynous and feminine scoring the least (see table 4.18). In CRU, there was a significant gender identity difference (H (2) =7.438, *p*=.024) in PP scores but this time the hierarchy was different. According to the mean ranks (Appendix 8), the masculine (29.55) scored highest, followed by the feminine (23.94) while the androgynous (17.33) scored the least.

Mann-Whitney U tests were conducted to find out which of these gender identity differences were statistically significant. A Bonferroni correction with a significance level set at 0.17 was applied to these. The test outcome (see Tables 4.16 and 4.19) indicated that when the three schools were combined, the masculine students (*Mdn*=26.0) scored significantly higher than their feminine colleagues (*Mdn*=23.0) in the use of TP. Also, the masculine (*Mdn*=25.0) were more proficient than the feminine students (*Mdn*=23.0) in CP. Among CU students, the feminine (*Mdn*=23.0) were significantly weaker than the masculine (*Mdn*=26.0) in TP, while only the androgynous (*Mdn*=24.0) and masculine (*Mdn*=25.0) significantly differed in CP with the masculine being more proficient. In CRU, only the androgynous (*Mdn*=24.0) and masculine (*Mdn*=27.0) differed significantly in PP with the masculine being stronger.

Table 4.19: Post-Hoc Test for Gender Identity Differences

Processing Pattern	University	Gender Identities Compared	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
PP	CRU	Feminine/Androgynous	69.0	369.0	-1.180	.238
		Feminine/Masculine	32.5	68.5	-.671	.502
		Androgynous/Masculine	47.0	347.0	-2.770	.006*
TP	CU	Feminine/Androgynous	2009.0	3090.0	-.963	.336
		Feminine/Masculine	1676.0	2757.0	-2.405	.016*
		Androgynous/Masculine	4040.0	8793.0	-1.704	.088
	OVERALL	Feminine/Androgynous	4178.0	6069.0	-.164	.870
		Feminine/Masculine	2918.0	4809.0	-2.383	.017*
		Androgynous/Masculine	6906.0	16636.0	-2.591	.010*
CP	CU	Feminine/Androgynous	1862.0	2943.0	-1.601	.109
		Feminine/Masculine	3984.5	8737.50	-1.849	.065
		Androgynous/Masculine	1512.0	2593.0	-3.121	.002*
	OVERALL	Feminine/Androgynous	3527.5	5418.5	-1.896	.058
		Feminine/Masculine	2554.5	4445.5	-3.468	.001*
		Androgynous/Masculine	7316.0	17046.0	-1.919	.055

a. Grouping Variable: Student Gender Identity
*Test significant at .017 level
Source: Author's Fieldwork (2014-2016)

4.2.4 Gender and Learning Schema of the Students

Johnston (1994) further elaborated that the blend or mix of an individual's processing patterns (Learning Schema), when better understood could help enhance the individual's learning experience. This section contains findings on the learning Combinations of the students in this study disaggregated by gender and gender identity to find out if differences or inequalities exist. Table 4.20 shows the frequency distribution of the students into the various categories of learners according to their gender in each university and overall. On the overall, in all categories, the highest proportion of the students were dynamic learners except among the females in CRU and males in BUT.

Table 4.20: Gender and Students' Learning Schema

Learning Schema by University		Student Gender			*Fisher's Exact Sig. (2-sided)*
		Male	**Female**	**Total**	
		N (%)	**N (%)**	**N (%)**	
CU	Very Strong Willed/Bridge Learner	55 (32.4)	12 (16.9)	67 (27.8)	*.033*
	Strong Willed Learner	36 (21.2)	15 (21.1)	51 (21.2)	
	Dynamic Learner	79 (46.5)	44 (62.0)	123 (51.0)	
CRU	Very Strong Willed/Bridge Learner	8 (22.2)	5 (62.5)	13 (29.5)	*.021*
	Strong Willed Learner	6 (16.7)	2 (25.0)	8 (18.2)	
	Dynamic Learner	22 (61.1)	1 (12.5)	23 (52.3)	
BUT	Very Strong Willed/Bridge Learner	15 (55.6)	4 (26.7)	19 (45.2)	*.159*
	Strong Willed Learner	5 (18.5)	3 (20.0)	8 (19.0)	
	Dynamic Learner	7 (25.9)	8 (53.3)	15 (35.7)	
TOTAL	Very Strong Willed/Bridge Learner	78 (33.5)	21 (22.3)	99 (30.3)	*.122*
	Strong Willed Learner	47 (20.2)	20 (21.3)	67 (20.5)	
	Dynamic Learner	108 (46.4)	53 (56.4)	161 (49.2)	

Source: Author's Fieldwork (2014-2016)

Table 4.21: Gender Identity and Students' Learning Schema

Learning Schema by University		Student Gender Identity				*Fisher's Exact Sig. (2-sided)*
		Feminine	**Androgynous**	**Masculine**	**Total**	
		N (%)	**N (%)**	**N (%)**	**N (%)**	
CU	Very Strong Willed/Bridge Learner	13 (28.3)	28 (28.9)	26 (26.8)	67 (27.9)	*.733*
	Strong Willed Learner	9 (19.6)	17 (17.5)	25 (25.8)	51 (21.3)	
	Dynamic Learner	24 (52.2)	52 (53.6)	46 (47.4)	122 (50.8)	
CRU	Very Strong Willed/Bridge Learner	3 (37.5)	5 (20.8)	4 (40.0)	12 (28.6)	*.529*
	Strong Willed Learner	0 (.0)	5 (20.8)	2 (20.0)	7 (16.7)	
	Dynamic Learner	5 (62.5)	14 (58.3)	4 (40.0)	23 (54.8)	
BUT	Very Strong Willed/Bridge Learner	3 (42.9)	6 (33.3)	8 (53.3)	17 (42.5)	*.543*
	Strong Willed Learner	2 (28.6)	5 (27.8)	1 (6.7)	8 (20.0)	
	Dynamic Learner	2 (28.6)	7 (38.9)	6 (40.0)	15 (37.5)	
TOTAL	Very Strong Willed/Bridge Learner	19 (31.1)	39 (28.1)	38 (31.1)	96 (29.8)	*.838*
	Strong Willed Learner	11 (18.0)	27 (19.4)	28 (23.0)	66 (20.5)	
	Dynamic Learner	31 (50.8)	73 (52.5)	56 (45.9)	160 (49.7)	

Source: Author's Fieldwork (2014-2016)

There was no statistically significant relationship between the students gender and their learning schema when the three universities were combined (χ^2=4.132, *df*=2, *p*=.122) but in 2 of the 3 universities (CU: *p*= .033; CRU: *p*=.021), the relationship was significant. In CU a greater proportion of the females (62.0%) than males (46.5%) were dynamic learners. In CRU, the reverse was the case and a larger proportion of females (62.5%) than males (22.2%) were very strong-willed or bridge learners. Further investigation (Table 4.20) also showed that there was no relationship whatsoever with the distribution of students according to their learning schema and their gender identity in any of the three schools (CU: *p*=.733; CRU: *p*=.529; BUT: *p*=.543) and when all the schools were combined (*p*= .838).

4.2.5 Discussion of Findings

From the findings presented in the preceding sections, statistically significant gender and gender identity differences and inequalities were found. These differences and inequalities were however mixed. As expected, they varied from one learning context to another and will be discussed under four broad headings corresponding with the investigations carried out.

Considering the fact that the various processing patterns of the LCI are used concurrently but differently by each individual, it was useful to find out how the use of each varied by gender or gender identity. Most of the females and males used SP at the first level. This meant that most of them were fond of step by step instruction and relied heavily on the prescribed or given parameters of learning tasks. In the design studio, this meant that they had the tendency to carry out their work according to established protocol. Design studio learning relies on established steps, protocols and this implied that most of both male and the female students had a learning preference which was in tandem with the expected procedures in the studio. Having a mean score above 25 by both genders meant that the SP ability was innate among students of architecture both male and female alike because according to the LCI (2004), it was used at a first level on the average. There were no gender or gender identity differences in the use of this pattern in any of the schools and overall. Considering those who did not use this pattern first, being able to use it when needed was also an advantage and suggested greater reliance on the other patterns. It was discovered however that eight (8) students made up of one (1) female and five (5) males from CU

together with two (2) males from CRU had a tendency to avoid using this pattern suggesting difficulty in the design studio. When compared with previous studies, the finding from this study about SP was not totally consistent. Studies like Datta (2007) and Cela-Ranilla and Cervera (2013) reported gender difference in SP in the favour of the females which was not found in this study. Also, the findings in this study differed from that of Severiens and Dam (1997) where it was found that females were higher in learning under the regulation of others which was tagged the reproduction-directed Learning style somehow similar to SP in the learning model being used.

In the case of PP, more than one half of the students in each of the three departments both male and female alike used it at the first level, implying an innate ability for it. A sizeable proportion of students also had the latent ability for this pattern, while only few students were found to avoid using this pattern. Each of the two sexes respectively having overall average median scores of 25 for this pattern meant that the use of this pattern was also at a first level like SP. Again this was consistent with the requirements in architectural learning especially in the studio where the knowledge of facts, details and principles comes to play. This was especially useful in architectural programming where correct response to information is applied for spatial analysis, site planning and also for detailing in working drawing preparation. Like for SP, no significant gender differences or relationship was found. On the overall, this finding is consistent with that of Datta (2007) and Cela–Ranilla and Cervera (2013) who found that there were no gender differences in PP among the architecture and combined university students studied. Gender identity differences in the use of this pattern however existed in CRU and overall with significantly more masculine students than androgynous using it at the first level. However, the median score for the masculine was significantly higher than that of the androgynous in CRU alone. This meant that in CRU, those students who saw themselves in more of masculine terms irrespective of their biological sex tended to operate more naturally with this pattern than those who are aschematic or gender neutral.

The use of TP was found to significantly vary by gender and Gender identity. First, on the overall, more males than females and more masculine than feminine and androgynous were found to have innate ability or proficiency for this pattern. According to the LCI (2004), using this pattern first, suggested the ability to

independently stand alone and practically reason out a learning problem or task. Generating design solutions relies greatly on learning by doing, trying out different ideas to solve the design challenge itself and ways to present the final design solution. Most of the females, feminine and androgynous also had this ability but only at a level where it could be brought out when needed. Also several students were found to avoid using this pattern which meant they did not have a flair for learning using that pattern. Secondly, using median scores, the males were found to score significantly higher than the females. Having overall median score of 25 and above compared to that of the females and feminine of 23 and androgynous of 24 means that on the average, the females, feminine and androgynous used TP as needed, while the males and masculine used it at the first level. This finding is in line with that of Datta (2007) and Cela-Ranilla and Cervera (2013) where male students had a higher preference for TP. Further, looking through the lens of gender, it was discovered that those who avoided using this pattern were more of the females (10.6%) than males (5.2%) and more androgynous (8.6%) than masculine (5.7%) or feminine (4.9%) further buttressing the argument that the use of TP was more of a masculine ability. Only in CU and overall was the significant gender and gender identity difference and inequality in TP abilities found and there were no significant differences found in the other two departments.

For CP, on the overall across all three departments, a significantly higher proportion of males than females and feminine used this pattern at the first level also showing gender difference. The median CP score of the male students (25) exceeded that of the females (23). The median score of the masculine (25) also significantly exceeded that of the feminine (23) with the male and masculine score indicating usage at the first level and that of the females and feminine as needed. This meant that on the overall more males and masculine had great flair for bringing out new ideas or thoughts and generating creative solutions which were unconventional and unique. This also indicated that CP like TP was more of a masculine thing than feminine. This is quite understandable if one considers the more independent and exploratory nature of males than females. When compared with previous studies using the LCI (Cela-Ranilla and Cervera, 2013 & Datta, 2007), the findings were partly in agreement. For both studies males scored higher than males in CP with Cela-Ranilla and Cervera's study confirming statistical significance. Another study using a different learning model

found that the male students were significantly more undirected in their learning than the females (Severiens and Dam, 1997). This significant difference was however found in CU alone out of the three departments investigated in this research.

The quest to find out which patterns each gender or gender identity was more proficient in revealed that on the overall and for different categories in each department there were mixed findings in their learning disposition. Overall, through the lens of gender, both the males and females were not balanced in their learning pattern proficiency. Being imbalanced meant that they did not have equal capacity in using these processing patterns. This was evident in the higher proportion of dynamic learners among the females overall. Being dynamic referred to having varying strengths in each learning pattern and this was more common among the females than males. As explained by LCI (2004), it implied that the individual needed to put in more conscious effort in switching between using the processing patterns, while carrying out learning tasks that required the combined use of some or all of these patterns. A good example is a course like design studio, which is central to architectural studies and it offers practical expression of what has been learnt from all courses done in the school (Ciravoglu, 2014; Salama, 2005). Solving design problems requires, following step by step procedures, knowledge and handling of large volumes of specific information, independent stand-alone reasoning using practical steps and also freedom to use creative ingenuity. The males had more balance in these patterns. They were equally proficient in SP, PP and TP but significantly differed in the use of CP in which they had a lower proficiency. The females however were equally proficient in SP and PP in which they had higher ability and also in TP and CP in which they had equal but significantly lower comparative proficiency. This overall result was seen in CU. The students in other departments did not differ by gender exhibiting balance. Within the male and female students in CRU and BUT, there was balance in their pattern use. On the average, both genders were most proficient in using SP and least in CP with the main gender difference being in the use of TP and CP. Being most proficient in SP was in agreement with Cela Ranilla and Cervera (2013) who stated that there was a repeated tendency for students to be highest in SP. This was attributable to traditional teaching methods, which involved more of traditional classroom instruction methods. Considering the female tendency to be

more conversant with or proficient in using SP and PP than CP and TP, an analogy can be drawn from the process oriented model of studio pedagogy by Salama (2005). In this model, SP and PP in the design studio were concerned with analytical or exploratory actions and synthetic or solution generating actions, respectively. These separate processes were broken down into left-side and right-side processes. SP and PP coincided with left side while TP and CP coincided with the right side. This suggested that among female students, the higher proficiency was for left-sided tasks than right sided ones. The males on the other hand, were equally balanced on the two left-sided tasks, with one of the left–sided tasks and significantly lower on one. The main difference here however was that going by Salama's model; the male students were significantly stronger than the females on both right sided processes. This partly suggests an alliance with scholars of the persuasion that females are more proficient at tasks that require the left side of the brain, while males are more skilled at tasks controlled by the right side. The argument for this persuasion are however mixed, inconclusive and beyond the scope of this study.

The overall higher imbalance or dynamism of females in the use of these learning patterns as interpreted by the LCR means that females and feminine required more effort and energy to carry out learning tasks which reqiure different kinds of expertise such as architectural design which was mentioned in the preceding paragraph. The implications of this finding on teaching and learning will be discussed in the next section.

It has been emphasized that no learning combination is inferior to another (Dawkins, Kottkamp & Johnston, 2010; Tabone, 2009). It was however noted that certain processing patterns were more suited to certain tasks than others and explained that teachers or individuals could greatly facilitate students excelling at any required learning task through the use of intentional teaching. The concept of intentional teaching and learning takes the LCI a step further by pointing out that the use of a learning pattern could be forged, intensified or tethered, depending on the individual's natural ability to achieve learning even for the unreachable learners as described by Tabone (2009). In facilitating a path for lifelong learning efficacy, it has been suggested that this quality of intentionality, which means teaching purposefully and with full awareness be developed by all instructors (Slavin, 2000; Dawkins *et al.*,

2010). Intentionality can however not be achieved without the instructor understanding the learning characteristics of the students they are teaching as argued by Johnston (1994). In this study, using the LCI, it was discovered by disaggregating the data, that various genders (male and female or masculine, feminine and androgynous students) had different propensities varying also by learning context.

This undoubtedly has some implications for teaching in the departments of architecture in order to achieve equitable outcomes for all. First, since more male than females were found to be proficient in tasks involving technical and confluent processing, methods that would help to develop these learning styles should be incorporated into teaching so as to foster a greater balance in the learning patterns for all gender categories. In such scenario, the teachers should plan lessons in such a way that would favour them borrowing from the intentional teaching strategies given by Tabone (2009). Dawkins *et al.* (2010) explained how through intentional teaching by the FIT (an acronym formed from the words, Forging, Intensifying and Tethering) concept students could be helped to be more balanced in their processing patterns.

For instance, in these departments where there are concentrations of sequence loving students, females in particular, the first thing to do would be to ensure that the students understand in detail every given task, particularly in the design studio. In fact a whole week could be given to fully interpret the brief with several brainstorming sessions where everyone is made to participate and state his own interpretation of the task. At this stage the instructor should better understand individuals and their tendencies it is from these that he will be able to create an intentional teaching plan. From the findings in this study, it is suggested that he could break the task into smaller manageable bits giving ample time with expected submission or review dates and try as much as possible to adhere to this. They could also help them by ensuring that for any given task, step by step directions and a sample of what is expected is provided. This could be very helpful since in architecture, many of the projects given are things the student have never done before, defined as “wicked problems” (Demirbas, 2001) and for some only seeing examples of such could help jump-start the design process and step up creativity levels. The instructors could also often give tasks involving group work and discussions which would encourage the students to

work together and thus force students to develop other skills by supporting one another.

In a study of gender and learning among engineering students (Persaud & Salter, 2005), it was found that females thrived in smaller classes where there was group work, hands on demonstration and collaboration rather than large classes with independent projects. A leaf could be borrowed from this and the suggested groups should combine both genders as a way of tethering the technical tendencies of the males, forging and intensifying in them sequential and precise abilities as needed per individual. Also, small practical tasks requiring quick independent hands on tasks could be given to the students to forge or intensify technical processing tendencies in the females. The learning tasks could also be varied to cater for a wide diversity of students based on the differing processing patterns they had propensity to use. It should be noted that while the motive is to accommodate the students by giving tasks they are naturally gifted in; intentional teaching does not exclude helping students to develop other propensities. In fact, one of the goals specifically is to help foster in the students the strengths to develop themselves along lines where they are weak. The lower confluent volume of the females could be intensified by giving occasional projects or quick design tasks that encourage them to think out of the box thus boosting their creativity levels, helping to balance their use of processing patterns, creating deep learning and helping them to discover permanently inherent creative approaches to problem solving which is a trait needed in the practise of architecture.

In this chapter, the second research question about how learning varied by gender and gender identity among the students was answered via the second objective using the interactive learning model. It was seen that the learning propensity of male and female students of architecture actually differed in three (3) main ways. Firstly, out of the four processing patterns, the female and male students differed in the use of TP and CP with males more predisposed to use this pattern. Secondly, the on the average, males were more balanced or less dynamic in the use of the four patterns than females implying a greater struggle for females in the school of architecture while consciously trying to switch between patterns. Thirdly, across the three schools, there were differences in these findings with the gender differences most pronounced in CU. Gender identity variation in the learning patterns were not as diverse as gender

differences with the major differences being between the masculine and feminine students in overall and in CU and CRU alone.

4.3. Gender and School Experience

In this section, the findings about the perceptions, statuses and experiences of female and male students of architecture in the three departments are presented and discussed highlighting perceived differences and inequalities between that of female and male students as set out in the third objective of this thesis. Though it is not always the nature of feminist research to investigate the experiences of males, it is deemed necessary by the researcher to include males so as to have a yardstick against which female experience could be weighed since the study lies between gender and feminism. First, the course and studio mentor gender preferences of the students in all three universities were investigated. Secondly, findings from the focussed investigation of the perception of the students about gender and students' experience of studying architecture were presented. Data about these perceptions were obtained from in-depth interviews of 35 purposively selected students and written narratives of 39 randomly selected students about gender in CU. The experiences and perceptions were analysed for gender differences and inequalities (Lengermann and Niebrugge, 2010) and discussed using the thesis of Lueth (2008) who employed student development theory of Chickering and Reisser (1993) to describe experiences of students in a school of architecture.

4.3.1 Gender and Course Preference

The students were asked to state the courses they loved best. The responses are presented in Table 4.22 in a gender disaggregated format. For all three departments combined, it was discovered that architectural design (17.9%) and history of architecture (14.7%) were loved best by the greatest proportion of students in all three schools combined. Females and males however had different preferences. For males, Architectural Design (20.4%), Computer Aided Design and Drafting (17.3%) and history of architecture (13.7%) were the most preferred, while for females, interior design (17.2%), history of architecture (17.2%) and Building Structures (15.1%) were the best loved courses.

Table 4.22: Students' Gender and Most Preferred Course

University	Course Loved Best	Male		Female		Total		Statistical Test
		N	%	N	%	N	%	
CU	Architectural Design	40	(23.7)	7	(10.0)	47	(19.7)	*Pearson's Chi-square Test* $\chi^2=26.301$, *df=10, p=.003*
	CADD	32	(18.9)	5	(7.1)	37	(15.5)	
	Interior Design	11	(6.5)	14	(20.0)	25	(10.5)	
	Building Structures	15	(8.9)	10	(14.3)	25	(10.5)	
	History Of Architecture	15	(8.9)	8	(11.4)	23	(9.6)	
	Others Combined	13	(7.7)	6	(8.6)	19	(7.9)	
	Graphics	13	(7.7)	5	(7.1)	18	(7.5)	
	Urban Design	10	(5.9)	4	(5.7)	14	(5.9)	
	Visual Communication	8	(4.7)	3	(4.3)	11	(4.6)	
	Landscape Architecture	9	(5.3)	2	(2.9)	11	(4.6)	
	Professional Practice	3	(1.8)	6	(8.6)	9	(3.8)	
CRU	History Of Architecture	14	(38.9)	4	(50.0)	18	(40.9)	*Fishers Exact Test. (2-sided) p=.599*
	Building Structures	6	(16.7)	2	(25.0)	8	(18.2)	
	Architectural Design	5	(13.9)	2	(25.0)	7	(15.9)	
	Others	7	(19.4)	0	(.0)	7	(15.9)	
	CADD	4	(11.1)	0	(.0)	4	(9.1)	
BUT	Graphics	7	(33.3)	2	(13.3)	9	(25.0)	*Fishers Exact Test. (2-sided) p=.382*
	History Of Architecture	2	(9.5)	4	(26.7)	6	(16.7)	
	Others	4	(19.0)	2	(13.3)	6	(16.7)	
	Building Components	2	(9.5)	3	(20.0)	5	(13.9)	
	Building Structures	2	(9.5)	2	(13.3)	4	(11.1)	
	Architectural Design	1	(4.8)	2	(13.3)	3	(8.3)	
	CADD	3	(14.3)	0	(.0)	3	(8.3)	
ALL	Architectural design	46	(20.4)	11	(11.8)	57	(17.9)	*Pearson's Chi-square Test* $\chi^2=30.411$, *df=10, p=.001*
	history of architecture	31	(13.7)	16	(17.2)	47	(14.7)	
	CADD	39	(17.3)	5	(5.4)	44	(13.8)	
	building structures	23	(10.2)	14	(15.1)	37	(11.6)	
	Others	23	(10.2)	9	(9.7)	32	(10.0)	
	graphics	22	(9.7)	7	(7.5)	29	(9.1)	
	Interior design	11	(4.9)	16	(17.2)	27	(8.5)	
	Urban design	10	(4.4)	4	(4.3)	14	(4.4)	
	Visual communication	9	(4.0)	3	(3.2)	12	(3.8)	
	Landscape architecture	9	(4.0)	2	(2.2)	11	(3.4)	
	Professional practice	3	(1.3)	6	(6.5)	9	(2.8)	

Source: Author's Fieldwork (2014-2016)

Chi square test outcomes confirmed that there was a statistically significant relationship between the students' best loved courses and their gender (χ^2 =30.411, *df* =10, *p*=.001) *p*=.951)

4.3.2 Gender and Choice of Design Studio Mentor

First the students were asked to choose the gender of their preferred mentor. Only 7.9% of all students combined expressed indifference to the gender of the mentor with many stating that the most important criteria for choosing a mentor was not gender but the ability to teach effectively. There were 12.9% of the females and 6.0% of the males in this category. The remaining gave gendered choices in favour of either female (32.3%) or male (59.7%) lecturers (See Table 4.23). A higher proportion of the students in CU (64.4%) and CRU (68.9%) expressed preference for a male mentor

unlike in BUT (26.2%) where a lower proportion opted for males. Though there was no statistically significant relationship between the students' response and their gender, it was clear that the more general preference was for male mentors signifying a general gender bias against females.

Table 4.23: Gender and Choice of Studio Mentor's Gender

		Student Gender					
		Male		Female		Total	
		N	(%)	N	(%)	N (%)	
CU	male mentor	101	(66.9)	38	(58.5)	139 (64.4)	Chi-square =2.240
	female mentor	38	(25.2)	18	(27.7)	56 (25.9)	df =2
	doesn't matter	12	(7.9)	9	(13.8)	21 (9.7)	Sig.=.326
CRU	male mentor	27	(73.0)	4	(50.0)	31 (68.9)	Chi-square =5.411
	female mentor	9	(24.3)	2	(25.0)	11 (24.4)	df =2
	doesn't matter	1	(2.7)	2	(25.0)	3 (6.7)	Sig.=.067
BUT	male mentor	8	(26.7)	3	(25.0)	11 (26.2)	Chi-square =.012
	female mentor	22	(73.3)	9	(75.0)	31 (73.8)	df = 1
	doesn't matter	0	(.0)	0	(.0)	0 (.0)	Sig.=.912
Total	male mentor	136	(62.4)	45	(52.9)	181 (59.7)	Chi-square =4.787
	female mentor	69	(31.7)	29	(34.1)	98 (32.3)	df =2
	doesn't matter	13	(6.0)	11	(12.9)	24 (7.9)	Sig.=.091

Source: Author's Fieldwork (2014-2016)

The written responses giving reasons for these choices were content analysed and varied. Out of the written responses of the students, the reasons for opting for a certain gender in mentors could be grouped under three (3) broad themes. The first theme was based on previous pleasant experience, secondly on acceptability or comfort, and thirdly driven by gendered reasons.

Among female students, some of those that wanted male mentors did not give any reason for this preference. This could be attributed to the fact that sometimes personal inclinations to certain choices could not be explained. Such responses were also judged as gendered since it involved making a choice for one gender over another. In CU, those who opted for male mentors on past pleasant experience gave different explanations for their choices. Some expressed the opinion that because their present mentor was male and they enjoyed learning under his tutelage, they would always opt for males. Some of them mentioned the name of the particular mentor stating that he was "*good in supervising students' designs*", another even described that same lecturer as *'a star'* and yet another said he was 'emphatic' meaning that he took great pains to ensure that effective learning took place among the students. Those whose explanations were based on comfort and acceptability free from judgements also gave

their reasons. Striking among such reasons was that of a female who said, *"they won't make fun of you it's easier to tell them"* or yet another who said *"they would understand and avoid altering my complex design"*. The responses of these students showed that they were seeking for avenues to boost their self-confidence or better still self-efficacy as regards the design skill. Those who wanted male mentors based on gendered reasons or general stereotypes also expressed their feelings in various statements. The harvested statements all show stereotypical arguments praising males or degrading females and some giving personal gender preferences for the opposite sex**.** A summary of related themes on why females prefer male mentors are shown in Figure 4.2.

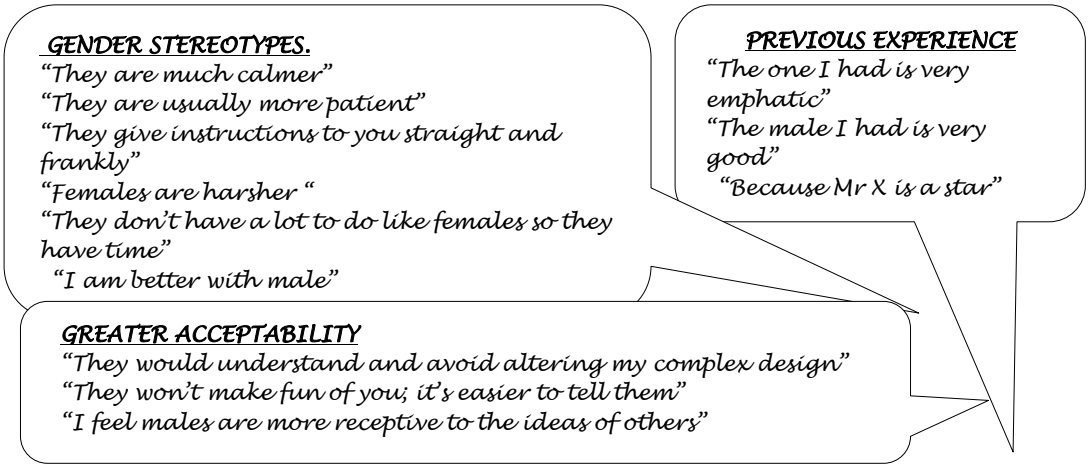

Figure 4.2: Why Females Prefer Male Studio Mentors
Source: Author's Fieldwork (2014-2016)

Some female students however said they preferred female mentors and their reasons were majorly driven by the similarity of their genders. One female in giving her reason for preferring a female mentor said, *'because I am a female'*. Another one declared categorically that *"I am feminist"*, while one said that if she had a female mentor, *"it would relate with every area of my life"*. Some other responses could also be grouped under the two other themes. Some females reported that they felt more comfortable with female studio mentors explaining that they seemed more understanding and that they felt more comfortable with the females than with males. A summary of these reasons is shown in Figure 4.3

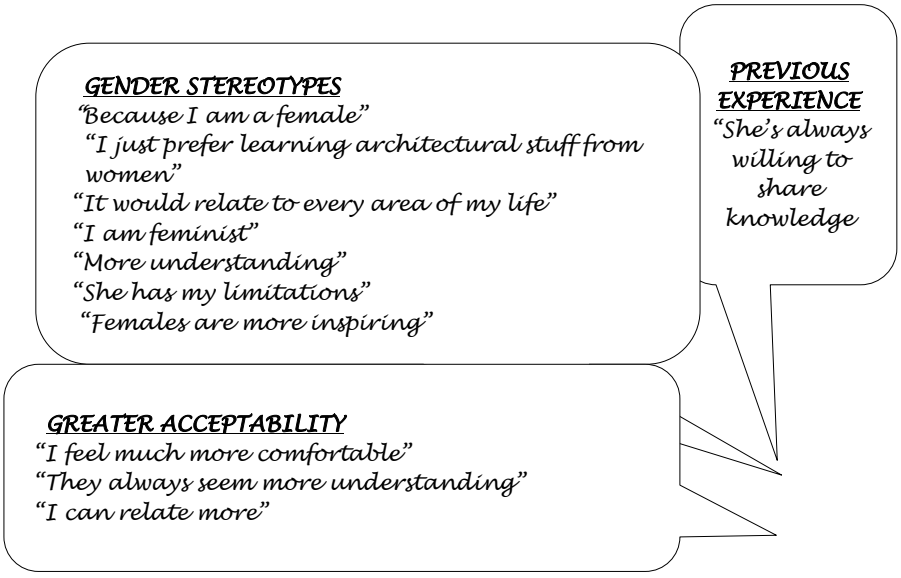

Figure 4.3: Why Females Prefer Female Studio Mentors
Source: Author's Fieldwork (2014-2016)

Most of the males (66.9%) who responded to this item said they preferred to have male mentors and the reasons also varied. Though the responses of the male students differed from the females, similar themes as identified among the females recurred. The reasons given by those who wanted male mentors varied. Like the females, some gave no reasons for their preference, while some categorically said they couldn't explain why. A great proportion said they enjoyed the current mentor they had and because of that would always opt for males. Examples of such responses included the following, *"All I have met gave me very practical solutions"* and *"he is calm and gives good advice"*. Those with stereotypes fed by mind-set and opinions had diverse stereotypes. Some other students gave mutual understanding between males as a reason for their preference as captured in statements like '*I would understand them better'* or *he would understand me better*. One of them actually stated that he had experienced better *'listening ears'* from a male mentor and said *'I can easily relate my problems to them'.* Some others also said they preferred to have male mentors for what could be classified as 'stereotype reasons' which extoll the virtues of males as superior to females. The response of one of the males was *'for more dominance'* or *"because men mostly dominate the architectural world"*. Others in this group said about male mentors, *'he has more ability to transfer knowledge'* or *'I admire most works by men'*. These all point to the fact that in their minds, male tutors have already

been conferred with a certain power or authority above the females. These thoughts are like stereotypes or bias, which are already imprinted on their minds and would make it difficult to be in a subordinate position to female authority. The summary is shown in Figure 4.4.

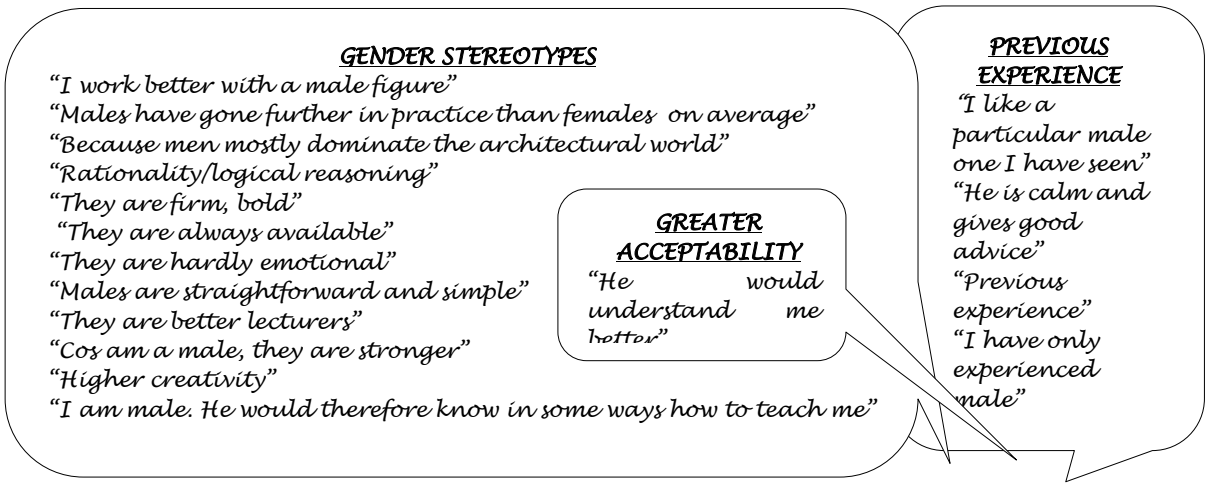

Figure 4.4: Why Male Students Prefer Male Studio Mentors
Source: Author's Fieldwork (2014-2016)

Surprisingly, as aforementioned, a sizeable proportion of male students indicated preference for female mentors and their reasons were also distributed among the three themes mentioned earlier. Those with reasons classified among pleasant past experience, and comfort and acceptability seemed to be intertwined and defied neat categorisation. The students mentioned the specific lecturers names and gave remarks like, "*Dr. Y, she is very structurally sound and she gives advice and doesn't impose her ideas"* or "Dr. J worked well for me" and also "*Dr. Y because she is encouraging and she inspires me".* Those with stereotypical ideas about females and personal preferences gave reasons such as *"I am attracted to the female gender" and "I relate better with females" and I just love working with females"* and *"they are easier to go and meet for advice"* Some male students also expressed the opinion that female mentors were *'easier'* to *'meet for advice'* or to *'relate with'*. Another male thought that females were more emphatic, while another one felt that they were more meticulous. Figure 4.5 shows a summary of responses given by the males for preference of female mentors.

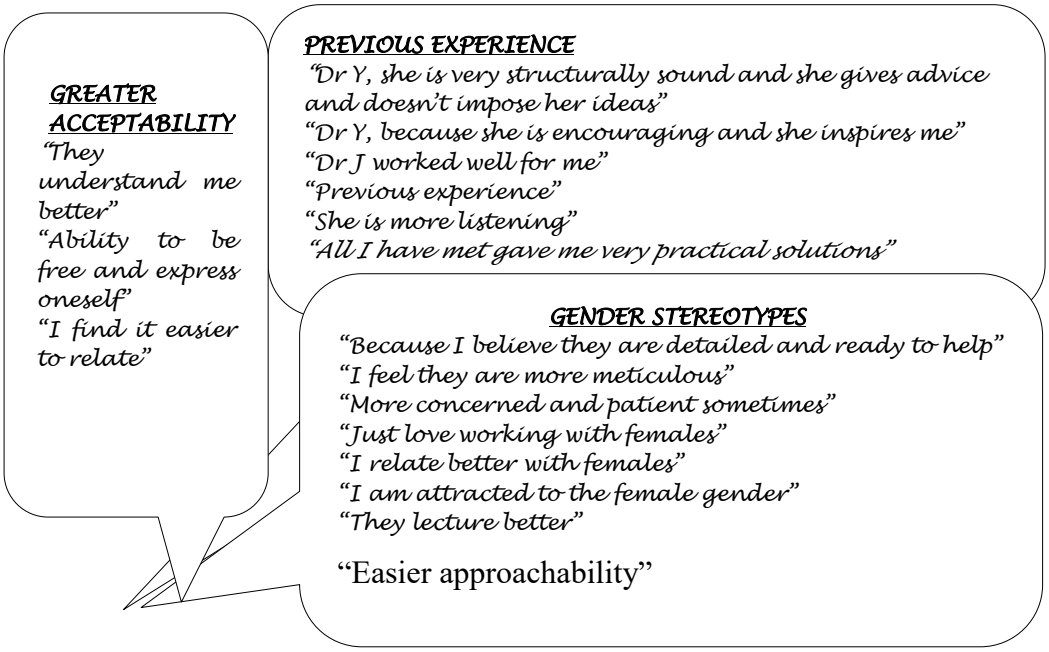

Figure 4.5: Why Male Students Prefer Female Studio Mentors
Source: Author's Fieldwork (2014-2016)

4.3.3 Gender and Students' Experience

As discussed earlier in Chapter two, students experience was investigated using the thesis of Lueth (2008) which posited that the school of architecture particularly the studio was a unique learning environment (Dutton, 1984, Lueth, 2008) where students experiences in their learning was found to be transitional, interdependent and having various outcomes (Lueth, 2008). High-achieving and low-achieving male and female students of CU alone were asked in series of in depth interviews to describe their experience in the school of architecture so far focusing on their present level of study. The responses of the students focused mainly on studio in their particular level of study though sometimes depending on the student, reference was made to preceding levels of study and other courses. The responses are presented below and structured sequentially according to level of study and by gender. A brief description of each student by their LCI learning pattern and observed activities preceded or was intertwined with narratives of their experiences in the course of their study with attempts to highlight differences, peculiarities or inequalities where encountered. Comparison was made between the high-achieving and low-achieving males and females touching on their gender identities in order to highlight gender differences and inequalities. This was done on a level of study basis because only then would

there be a good basis of comparison between the students since that was the smallest platform with the most similar learning circumstances.

(i) 200-Level

The 200-Level is often regarded as the start of studying architecture in most universities. In this case, proper introduction to Architectural Design Studio was commenced at this level. Courses like History of Architecture, Architectural Graphics, Environmental Science and the other prerequisite courses such as Building Components and Methods and Building Structures were introduced alongside to the students. At this level the students are expected to learn the rudiments of architectural design and basics of construction through classroom-taught courses and design problems handed out in the studio. At this level, the aim is primarily to bring out the students creativity via architectural design. They are often encouraged to think outside the box and required to prepare architectural presentation drawings. The rule about prerequisite courses begins to operate at the end of the first semester in this level of study. This means that any student who got an F grade in the three prerequisite courses would not be eligible to sit for the next level course. It was important to note that most students prior to this level had a fairly easy experience of their studies. Upon resumption, they are introduced to courses like Architectural Design, where they started designing small buildings, learning architectural programming, spatial analysis, anthropometrics and other fundamental aspects of building design. Other courses that are offered included Building Structures, which covered fundamentals of structural systems in buildings. In Building Components and Methods they learn about major and minor parts of buildings and how they are fitted together. In Architectural Graphics, they are taught about the art of expressing their design ideas in standard acceptable format for architects, delineation, casting shadows and preparing different types of Architectural drawings. Environmental Science and History of Architecture are also taught at this level. For many of the students, it marks the beginning of sleepless nights, desk criticism and balancing studio with other courses, meeting multiple drawing assignment deadlines and for some students, this marked a decision point on whether to continue with architecture or dropout. Findings by Lueth (2008) revealed that the students' experience in the first and second year in the school of architecture was described as confusing and frustrating. Learning

propensities and characteristics of the students are discussed drawing on the Interactive Learning Model LCI (2004).

All the 7 students interviewed in 200-level, comprising male, female, high-achieving and low-achieving said that for some or all aspects of the course, the experience was difficult though the degree of difficulty was perceived to be different for each. The words used to describe the experience varied and included, "stress", "confusion", "frustrating", "challenging", "discouraging", and "too demanding" corroborating the findings of previous research (Bachman & Bachman, 2006; Powers, 2006; Lueth, 2008) about the studying of architecture generally. As to be expected, the high-achievers irrespective of their gender were able to tackle the challenges differently (Powers, 2006) than the low-achievers. Their respective reactions and actions taken marked the difference in the experience. For both high-achieving males, it was the personal commitment and purpose that distinguished them. For, Yinka, a high-achieving male, when asked if 200-level was frustrating or challenging, his response was as follows,

> It was both. Actually at first it was very hard because when we are in the class everyone is nodding…am the one that didn't even understand what they were saying at all.

He explained that he had to engage in self-regulated learning to ensure he could connect deeply with what he was being taught. Powers (2006) had described self-regulated learning as "a student's self-generated thoughts, strategies and goal directed behaviour" (Powers, 2006, pp.2) which he argued based on his findings that high-achievers in a design studio had been able to engage. Despite having a natural flair for architectural graphics, which was supported by his high sequential and precise processing skills, when faced with academic challenges, Yinka said he had taken specific initiative to mitigate such by extra studying and consulting students in higher levels of study. He described this saying,

> So I had to go to the internet, I downloaded videos, kept on trying to learn about architecture on my own, spent time in the library reading books, so far I've been able to catch up.

He was able to exert the needed energy required by his dynamic learning schema to Forge and intensify his weak points. As explained by Dawkins *et al.,* (2010), forging and intensifying strategies components of intentional teaching or learning could be

used to determine the types of learning tasks to engage their students in after they had determined their strong and weak points in learning using the Learning Combination Inventory. Yanju, another high-achieving male in the same level said that the experience was stressful corroborating Lueth (2008) but his zeal for the course was what kept pushing him to work hard. He enthused,

> I think it's challenging like balancing everything like last semester working in the studio and still carrying our general courses along was something …. Me I have a strong passion for architecture that's what is pushing me because the stress is something else… design is not extremely difficult…I like structures I like calculations generally, I like graphics also. Components…I enjoy it.

This self-efficacy or ability to exercise control over what his learning task demanded despite the challenges faced (Powers, 2006) was the motivating factor and mitigated the effect of that stress. This was also in concord with the findings of Bachman and Bachman (2006) who reported that self-efficacy and social support mediated the effects of the stress (Taylor, 2011) in a school of architecture which could be seen in the shared experience of Yanju, he said,

> Except for getting frustrated when the time available would not be sufficient for a satisfactory output, there's nothing I don't like. I like the fact that architecture is not so strict like there's a particular method for doing everything…since you can express yourself in a different way, it's very good. Some people start from elevations…plans or sections…I like the fact that you get to be more creative"

For Yanju being a strong willed learner having a naturally high propensity for all processing patterns of the LCI seemed to help this self-efficacy. The level of reactions, attitudes and approach to academics at this early stage of learning by these male students was highly commendable. It was interesting to note that both students were masculine in their gender schema supporting the argument that thriving in school of architecture needed strength like a man.

For the high-achieving females, their experience was also similar, For Bomi, the experience of 200-Level was described as more difficult than that of the first year and she had tackled it by being very hardworking…having endurance, coping with the very time consuming task and sitting down to draw and construct.". She pointed out,

> It was definitely not as easy as 100-level, because we had to draw studio and graphics. It was time consuming, no sleeping, sleepless nights. It's actually a very enjoyable thing because when you end up seeing your work, you'll be very happy"

Bomi also had similar stories to share about other courses. She said she found all courses easy and reported no challenge she could not surmount. For design, she said, though she didn't always start early as she had to "get everything down and know what I am doing", but once she started, she always finished in the nick of time. This was perfectly in line with her high score in Sequential Processing which she had maximized by learning to be in control of her time. Bola, another high-achieving female also said her experience in 200-Level was a lot of stress and challenging but she scaled through it by planning and adhering to her plan as explained.

> Yes I would say challenging …if you want to be good…there's something that's supposed to pose a challenge to you for you to know what you are capable of. I can't do something that is beneath me. I won't know my capabilities so there has to be something challenging for me to do, so, yes it was challenging but I enjoyed every bit of it…I enjoyed this semester's design and I often put myself in my design, I could see myself in the shopping mall, the cinema precisely, I really enjoyed it, it was a lot of stress but then I enjoyed it."

Explaining how she planned her time, she said,

> "I don't read too much to pass, like my plan this semester, I draw for like 5 hours a day…but like at the beginning I wasn't following it but it got to a point where I knew that I should take it seriously… I draw mostly in the night. I attend lectures; I try to attend all my lectures".

Both high-achieving females were strong-willed learners though their areas of strength differed. Bomi was very low on precise processing (18) nearly at the avoid level which was confirmed by her stated dislike for reading and preference for drawing and practical things while Bola's lowest score of 23 in Technical processing was close to the use first level, hence her natural propensity for being an all-rounder and ease in surmounting the encountered challenges. Both girls said they enjoyed the course despite its challenging nature. Bola was found to be masculine in gender identity while Bomi was androgynous and both of them were from backgrounds where they enjoyed a lot of social support. The social support (Taylor, 2011) from home and the fact that stereotypes of traditional female roles or limitations were not implanted on them boosted their self-efficacy towards architecture. Also unlike some of their female schoolmates they never saw themselves as inferior to their male counterparts. Their high performance in the previous semester had further boosted their self-efficacy and was good motivation to sustain their interest.

The low-achieving students in this level of study described their academic experiences of the course in similar ways and seemed to have many things in common. Bose, a female student who was feminine in gender identity said she didn't find the course easy and it was challenging, while Boye, a feminine student said it was too demanding. The gender ideology possessed by Bose and Boye's tended towards patriarchalism. This patriarchal ideology affected them somehow since patriarchal tendencies or conventions were not favourable to ginger a female's performance and self-confidence (Ahrentzen & Groat, 1992). For instance, Bose remarked that,

> We the girls, I think that people have put it at the back of our minds that architecture is for boys.

Such a mentality in her subconscious mind was likely to covertly dampen her motivation level and eventually reduce her self-efficacy. Both Bose and Boye possessed very dynamic learning schema, hence they needed extra motivation to carry out their learning tasks which unfortunately they were unable to supply and as a result, both of them often failed to complete or submit assignments or attend lectures consistently. For Boye, the experience was extremely difficult, she said

> I would say I've never experienced this kind of demanding work before. It's really demanding... If I can use my time well and do everything in good time… I have a challenge sometimes I have different assignments at a time and personally …I'm not really able to focus on two things at the same time.

This inability to multi-task was a major setback for her and often made others tag her as lazy. When asked how she had coped so far, she replied,

> I'll drop one as long as I know that I can still meet the submission time. When I'm done with that one, I'll do the other one… I'm the only one that I've noticed like that.

For Boye, her experienced stress could be said to be partly the result of her limitation in terms of speed and output. Despite her input, her perceived output was not encouraging and in turn reduced her motivation, and hence put her in a situation of stress and increasing workload she found insurmountable.

The conclusion that could be drawn about Bose was that her active engagement with her learning was low firstly due to the observation that she frequently absented herself from classes and seemed to be pre-occupied with other activities, which took up her time and divided her focus on her studies. Being high on Sequential processing, and

being a dynamic learner implied that she needed extra time and effort to complete her learning tasks, unfortunately, the little time she had left after her extra-curricular activities was always inadequate to carry out her learning tasks. This she confirmed when she confessed that, she knew wasn't putting in very much time into her studies. Secondly, the little "rushed" input she made was according to her was not always appreciated or approved by her design studio mentor.

> Design is a bit challenging especially when you have something at the back of your mind, your supervisor now says this this this and you have to change it over and over…sometimes I think she is trying to frustrate me and sometimes I know she is right that what I did was wrong but overall design is fun but challenging and it helps you gain more experience.

This attitude of expecting a rubber stamp and approval of just any conceived idea by studio-supervisors was also pointed out by Powers (2006) as a differentiating quality between high-achieving and low-achieving landscape architecture students who could not understand that the mentor's role was that of a facilitator and that the responsibility for the design was theirs. The fact that she said, design was fun, showed that her main stressor was not her technical inability but her mindset or attitudes (Ideology) and her inability to effectively manage her time and screen out time wasting activities.

Yele, the only low-achieving male interviewed in 200-Level also described his experience as challenging, frustrating and confusing. The first challenge he faced was that he was ill prepared for the course with no sufficient background knowledge in fine art and technical drawing from his O'level. Despite the fact that he had A B-grade in Technical drawing at O'level and He said,

> It was different from what I presumed. It was a lot more exposed; a lot more deep…Technical drawing was just like scratching it on the surface…When I got here, and they were asking us to do somethings and I was confused and couldn't do them. Then I looked around, and I see some other people doing them. I think maybe because of the school I went to. I find it challenging.

Secondly despite the introductory courses taught in 100-Level, he was not able to catch up hence he was slow and the workload kept piling up and described his experience as very frustrating.

> Yes, it was like that, for some period…just frustration, because I've never been in the process of handling so much workload, at that particular point of time…The workload is the major"

For Yele, engaging in tasks for which he was ill-equipped combined with the workload was difficult to adapt to even though he tried and said he was beginning to adapt and that his experience started helping him to develop skills, he still expressed a stressful experience which forced him to take certain decisions. Like he said about the design studio,

> I went through so much criticism. …after doing something, show my tutor, he doesn't like it, go back again, he doesn't still like it, go back again… I remember when I got tired of going back to my tutor.

This must have marked the 'break-point' (Aderonmu, 2013) for this student, beyond which he totally relaxed and stopped trying because he did not even bother to submit his design portfolio at the end of that session and he left the school for reasons given as,

> I already lost interest in the course.

The second low-achieving male student in this study was Yomi. Found to have an androgynous gender identity and a very dynamic learning schema, he could be described as a student with no will to learn as he was fond of absenting himself from classes, not making submissions for assignments generally making little or no input at all to his studies. From interactions with him, he said he knew that he was not serious at all and all other promises he made to put in more effort and attempts to encourage him proved futile. It was impossible to ascertain why he acted this way and was obvious that he had personal issues beyond the scope of this study.

The main gender difference observed in the experiences of the males and females reported at this level was among the low-achieving students. The low-achieving female students had the knowledge but lacked the drive or ability to carry out the work while the male student did not possess the ability despite his efforts. The case of Yomi however could not be situated within this. For the females this lack of ability could be explained by their very dynamic learning schema which they were yet to be able to master by a lack of motivation and dedication. For Bose, being strong in sequential processing and low in confluent and precise processing, excelling in architecture called for extra effort. For Boye, being strong only in precise processing and weak on all others, she also need extra input. It was generating this effort coupled with fighting the negative gender stereotypes which was the challenge. For Yele on the other hand, who despite being a dynamic learner didn't have to fight negative

gender stereotypes, supplying the needed energy was less demanding. It could thus be suggested that the negative gender stereotype was a factor that could negatively impact the performance of female students studying architecture.

(ii) 300-Level

At 300-Level, consolidation of the previous year's work is carried out and students are expected to have gained a deeper mastery of architectural principles. A more detailed and in depth knowledge of what was taught in the previous class is also expected. The students are introduced to the art of preparing working drawings also training in Computer-Aided Design and Drafting officially commences. Aspects of Urban Design, Planning and Interior Design are also taught at this level. This is usually the second year of real architectural studies and most students are more accustomed to the courses in the school of architecture. In this level of study, more is required of the students in the sense that they are expected to have a more detailed knowledge of the courses. For example, in the design studio, structural and statutory principles are expected to be incorporated in the students design. More detailed analysis of their design briefs are expected as the projects handed to them are also not so familiar and of a larger scope. Urban and Industrial Design modules are introduced at this level in addition to Housing and Institutional Modules. The class was usually divided into 4 modules for their design studio with each group doing a different design scheme for each semester. The groups the students are in for each semester are different and the other two design types the student had not done are left for the following year. The designs are tagged Housing module, Institutional and Complex Buildings module, Industrial design module and Urban Design Module. The students in the study of Lueth (2008) had described the third year as challenging and frustrating but with some clarity obtained. The description given of this year by the students in this study however deviated slightly from this.

The two high-achieving male students interviewed were different in their gender characteristics. Tola was androgynous in gender identity, while Tony was masculine. In their learning schema also, they differed, while Tola was very strong-willed, Tony was a dynamic learner. For a high-achieving male student like Tola, his description of the level of study was given as easier compared to the previous year. As he said,

> I think 300-level was easier; the only new thing was maybe that…we started the industrial design and factory…it was not so new for me because of the Industrial Training (IT) between 200 and 300-level. I did my IT with Civil Engineers so it wasn't so difficult although I think 300-Level required more precision and together with the knowledge of structures and other things we used to overlook… in 200-Level but in 300 level you have to study those things in detail. That was the major difference; it wasn't very difficult for me"

For Tola, Like Yanju in 200-level, his confidence, love and passion for the course had most likely mitigated the stress (Bachman & Bachman, 2006) enabling him to describe his experience that session as not very difficult. The reason for this was because from mentoring him in the abattoir design studio, it was obvious that there were times when he was heavily overwhelmed by the design, though he kept at it and eventually came out with a good proposal. As he voiced out,

> About design, when we were given the project we used like the 1st 2 months to get the principles, the knowledge that might have been taught and we would have been able to spend more time exploring the design...eventually we came up with our designs…the first thing that came into our heads… [they should have] taught the principles so that we had more time and more focus with the design"

This reaction to the learning by doing process was just an outburst as he later expressed while describing architecture as a course where some things had to be learnt instinctively and individually.

> It's not like any other course you can just go and study like book study. It requires interest more than most courses and then it requires…some parts of it are actually more instinctive…not something that can be learnt or taught…When you are coming you have to have the interest and …ability to design in the first place…an art part of you before you enter, it would make it easier… I think the study of architecture is to make it more professional…but most of it is always from the person initially."

Talking about what made for difficulty in the school of architecture, Tola said,

> Some people don't have as much interest in architecture as others and some people are not so good in drafting. Most of the people because of the interest and they don't give so much time…to the studio, I give a lot…on average maybe about 70 or 60% daily…I think the interest is a very important part.

From his submission and his regularly observed demeanour it could be read that he was self-confident, possessed this required interest and was highly passionate about the study of architecture. For Tola, his interest, zeal and input were what made the difference in his academic achievement. This high-achieving performance served as a

motivating factor to increase his zeal for the course which he said had increased and like he said.

> In 100-Level, I thought architecture was all about drawing buildings. When I got to know more, I like it, the inspiration became greater"

Tony another high-achieving male, said the experience of 300-Level was mixed,

> It was very interesting, very challenging but not difficult. I was always overcoming it and enjoying it at the end."

This was another case of self-efficacy and passion. In describing architecture as a course, Tony said, he loved it because it involved,

> Different people giving a solution to complex problems …I really don't like reading, I had to adapt to it because I had no choice."

This was a case of being able to intensify his previously precise processing abilities to attain its current level to the extent that Building structures became his favourite course because it made his design realistic. Architectural design was also one of his strong points, because for him jury time was always a positive time as he described his love for the time,

> When I am praised…the fact that you are placing your work on display for the world to see…it is exciting.

His recurring success had heightened his self-efficacy for design tasks and further reinforced his self-confidence. He referred to himself, Tola, some other males and no female as some of the 'stars' or 'gurus' in the design studio in his class reinforcing the masculine ego or self-love of masculine stars as described by Brown (1989) and the fact that the masters are always males (Ahrentzen & Anthony, 1993). Tony's main strategy to approach his work was explained as follows:

> I draw a time table of each day and I stick to it. I try to make up for it if I miss it ...I can't work overnight, I work at day so I only come to school when I have lectures or to consult my supervisor.

This disciplined way of working helped him, seeing he was a dynamic learner not naturally proficient in the use of sequential and Technical Processing and required intentional effort to switch between patterns. For example, like he said he had to force himself to read, showing that he was able to engage in self-regulated learning like Yinka in 200-Level.

The high-achieving females in that level of study who were interviewed were also different in gender characteristics. One of them, Carol who had topped the class since her entry into the school was androgynous. She was not held bound by thoughts that as a female, architecture was less suitable for her. This was largely driven by her early exposure to architectural work by her architectural technologist father who she had being understudying since she was young and prior to coming into the school of architecture. For her studying architecture seemed a walkover. Her experience of 300-Level was described in the following way

> It's normal, I won't say it's different…it depends on how much you put into it. We have more courses; I guess that sort of makes it more challenging for some people. I think it's more of getting balanced".

It was obvious from her discussion that she had found this balance. Like the high-achievers, she said the overall experience was interesting and like the students in the study of Lueth (2008) her experience got clearer. Her description of her progress every semester showed the transition made with each successive semester.

> Every semester, I learn a better way of doing things…that you know that this didn't work out…you panelled earlier, maybe you should see your supervisor more, do something else differently, it's actually a very interesting experience".

Her response showed that she was actually very connected with her learning process than most of her female classmates, she understood herself and had found a way of working that produced results for her and like for those strong on sequential processing, she could "easily establish links with previous experience"(Datta, 2007). For instance, she said she worked in the studio if she had to but usually got more results by drawing in the hall of residence. Her reason being that of convenience and continuity since the studio was closed by 9.00 p.m. every day and instead of break the flow of work; she would rather stay in the hall and work for as long as she could. She gave some reasons as she said,

> "Apart from the fact that staying in the studio helps your supervisor come to see you…but in the hall like everything is there. You don't have to worry about forgetting anything in the hall when you go to studio and then I did my 200-Level omega semester studio practically sitting on my bed. I'll just wake up in the night and continue. You don't have to get up and start coming to studio… [which involves] you having to get up and dress and walk in the sun, then boys playing like really, really loud music disturbing everybody.

Her gender side showed up with her professed love for female freedom, interaction and collaboration (Ahrentzen & Groat, 1992; Datta, 2007). She said when drawing in the studio she was not as free as in the hall because of the presence of the male students. She explained this, saying,

> I stay at my own table, you don't move about like when you are in the hostel with girls, there you can drop your work, go to someone's room and chill…I don't know, I think with girls it's a more different environment, its safe, you are more familiar"

The other female high-achiever Chioma on the other hand though feminine in gender identity unlike most high-achievers who were either masculine or androgynous, said she preferred working in the studio. Unlike Carol, Chioma stayed and worked regularly in the studio. She said her daily routine entailed her staying all day in the department as she usually left the hall very early in the morning and returned there in the night. Unlike most of the girls, she didn't always sit huddled with them in the section of the class where most of them sat.

> I usually sit in my own corner. I don't sit around many girls, I've been like that since 100-level…[I am] closer to the boys because they are usually more in class…I leave the hall early in the morning and I get back to the hostel in the night so I don't have much time to relate with the girls, so the boys I meet in the studio are the ones I relate with…I don't know how to do it [work in the hall]…I can't position my board well, my back ends up paining me…I don't see any discomfort in the studio".

These differences in the individual way of working notwithstanding, both females always turned out a large volume of work compared to their classmates though the graphical presentation was not very outstanding. Chioma actually confessed that she found the rendering part of graphics very hard and said,

> It's a lot better now, but I can get better.

For Chioma, like other high-achieving classmates, she said the experience of 300-Level was not different from 200-Level, however, she said it was still difficult in a certain sense and was the one thing she didn't like in the course of the study,

> Till now I still find the analysis part of design challenging. Once I'm done with that, drawing and everything else goes smoothly but my major problem in studio will be the first part where I have to analyse everything… and generally that is still the hardest part… I never seem to get it on time, so it slows down my design"

For other courses, she had been able to gain stability but it was obvious that she was yet to attain that in her design work despite her being a strong-willed learner. When asked if the work was easier than that of the previous level, she replied that:

> Well, I don't believe, I think it is the same all through. It's not like its initially challenging, at least for me, it's challenging all through. There is no special feeling, it's like I haven't found my skill. This semester I'm done with all my major exams, my major courses in architecture, I still have not…as far as I am concerned. Though it's easier to go through this semester of 300-Level after 200 and 100-Level. I know what I am supposed to do. It's not that I am trying to find out and all of that. So therefore it is easier than other levels but it's still challenging."

The professed difficulty in analyzing the design brief as expressed, notwithstanding, she was still able to turn out a large volume of very functional work making up for the absence of confluence or outstanding artistic architectural ideas. Despite her castigating herself or not praising her own efforts which was described by Jeanne Gang, the first female architect to design a skyscraper (Heynen, 2012) as a natural tendency of women, her work and Carol's often stood out for the simplicity, functionality and being well thought-out. This is significant because these qualities formed part of those that were described by Franck (1989) as unique qualities of women's work. In describing the demands that studying architecture placed on her, she enthused,

> Well, it takes away your social life, practically, nobody said so but practically you are not allowed to have any friends. It doesn't give you that much of a time to make friends with people of other courses...I believe if you go through the school of architecture you can go through anything in life. The fact that you have assignments today and you have to submit tomorrow…it keeps you at an edge, you are never dull."

This all-consuming nature of the course of making students to have no other interest apart from their drawings agreed with that described by Cuff (1991) but not AIAS (2003) which discounted it as a myth. Her described challenges and absence of overwhelming confluence in her architectural design portfolio, notwithstanding it was obvious that her highly determined nature and love for creativity and design of other items kept her going. This was obvious in the plethora of hand-crafted items she rapidly turned out ranging from hairpieces, to notebooks and cards confirming her expressed passion for handcrafts. She confessed,

> There are times when I feel like…I ask myself why I ever studied architecture but there's still that part of me that really wants to.

For the low-performing males the themes that recurred in their interviews are discussed. For Tayo, a feminine male student with a very dynamic learning schema, his academic achievement was really low and his experience of 300-Level was described as not easy. Not in Good academic standing in the first semester with a GPA lower than 1.5 and a third class CGPA, while describing his experience in architectural design in 300-Level, he said,

> It wasn't easy at all, because I had to do a lot of research, and it was a new aspect of Architecture [industrial design] that we were being introduced to, so it actually took a lot.

He said he learnt design from his mates, personal research and lecturers and said,

> I would not tag myself yet as strong in designing I think it depends on the creativity of the individual, and how the person can make use of the creativity in his design.

In tackling modelling for the first time he referred to the first model he made in 100-level. As he described his experience in the following words:

> It was difficult because I didn't really know how to make models back then in school I found it difficult and one of the things I still find really difficult is maybe when it comes to aspects of rendering and yes …Hmn, okay let me talk about myself. Okay, I think when it comes to rendering and, rendering and… Okay, I know a little bit of it, but I think what I know is not enough for… I think I have not inquired enough… I am planning on getting better on how to.

He did not have a background in Technical Drawing or Fine Art so drawing of any kind was difficult for him as evident in the fact that at the end of 300-Level, he was yet to pass four out of the six prescribed basic drawing courses earmarked for 100 and 200-Level. Not only was drawing difficult for him, he was not serious with attending classes as evident in the design studio in the omega semester. When he was tackled on this issue, his response showed that his self-efficacy with regards to drawing was low, and hence motivation and ability to self-regulate was very low which according to Powers (2006) were both a characteristic and an outcome of low-achievement in school of architecture. Tayo explained the reason for such behaviour of which he admitted he was often guilty of.

> I think we [boys] do like that because maybe a little bit of peer pressure, because when you see your roommate when you wake up early in the morning , when you see your roommate not really getting prepared for class, you might

> feel like okay what is the point, unless you have this personal conviction that okay I have to get to class, I have to do this, I have to do this , but most boys maybe because of peer pressure and independence that they are free to do anything they want.

This statement confirmed his lack of personal motivation and tenacity as pointed out earlier. The most striking observation about him was from an incident in the semester in which this interview took place. When the whole semester design was being wrapped up and portfolios were being submitted, it was discovered that he did not show up for consultations with his mentor until the very end of the semester. After being reprimanded, he went off in a huff showing a deficiency for handling interpersonal relations (Chickering & Reisser, 1993; De Larrosa, 2000) with others and failed to make any other attempt at submitting thereby failing architectural design and several other courses. This action earned him an extra year as he was asked to repeat the whole year according to the university's regulation on students with many outstanding courses. The conclusion on Tayo was that he needed sufficient motivation to execute or to self-regulate his learning tasks. By natural disposition from his very dynamic learning schema, he needed the ability to self-regulate his learning, to forge and intensify 3 processing patterns - precise, technical and confluent processing, which he was low on. Unfortunately he was not yet able to attain the balance and stability described by Lueth (2008) achieved by most students in the third year of the study.

The other low- achieving male student in that level was different, yet similar. They were both similar in the fact that they did not have an innate ability for self-motivation, hence in the face of obstacles, their motivation further dwindled and they were not carrying out prescribed learning activities. In the first semester of that session, both of them were in the Industrial Module, which they had never done before and it was obvious they were finding it difficult. It took a deliberate challenge to Tunde by the mentor to get him to start designing and have something to show at the end of the semester and since he was more skilled in designing, his submission was judged fair by the jurors. Tayo also started designing really late into the semester and since he was still struggling with his drafting skills, he barely just managed to pass that design studio by getting a D-grade. Since Tunde was talented in terms of drawing it was difficult to describe his experience in 300-Level specifically because

he had multiple academic issues. First of all, though he was in 300-Level, he had several outstanding lower level courses, which he was yet to pass. With a CGPA of 1.60, he was obviously at the verge of being classified as not in "Good Standing" academically. Describing his academic experience, he first attempted to explain the reason for his poor performance.

I reacted to the large class because I must be pursued to get something done.

This could be corroborated because it was observed that when he was motivated, challenged or singled out by mentors, he tended to respond better like the experience shared above. In further explanation, he gave a history of what motivated him to study architecture. He had worked on a construction site previously and he enjoyed the experience. He decided to take his love for construction and design of buildings to a professional level by getting a degree in a course which would afford him the opportunity of expressing his drawing talent and his choice was architecture. On his getting into the school of architecture, he was shocked that the volume of theoretical courses outweighed the drawing or practical courses. According to him,,

> I was not serious and not focused and not attending classes because…I prefer the trade approach… I don't like to be restricted. It is more theory than I expected.

When he finally realized he had no choice but to cope, he had already failed a lot of courses and had to start working, putting in effort and progressing. He said

> I know my progress is slow but with school work it's difficult. The theory is too much. I don't think it is relevant like in history.

Drawing posed no challenge to him as he displayed sketchpads of building designs he had done from his imagination and at his free time to the detriment of other courses. With proper external source of motivation and natural endowment in all processing patterns in his very strong willed learning schema, he still had the opportunity of building his CGPA. The two low-achieving females in this level were found to be feminine in gender identity. The achievement of one of them called Chinwe was not very low as her cumulative result was in the second class lower division unlike Chide's result which was in the third class category. Interestingly both low-achieving females were feminine in gender identity and were Bridge learners. For Chinwe, she said 300-Level was challenging

> At a point, you think you are falling off the edge but you feel like it's not that bad and it's just a passing phase. Yes I like design, but at a point, because I was good in TD, I did not really think I needed to put in more effort, so I relented towards design.

This was a prelude to her experience in the previous jury, in which she was tackled and she described as being rough,

> I survived…I hadn't put in much, so I was not confident. I was lazy with the design, even though I designed with my mentor but I slacked while drafting… and now I'm in the process of increasing my effort…there are times that structures looks confusing…components means construction and site work is difficult, I don't like site work.

Like Chide, Chinwe was selective in the aspect of architecture that thrilled her and it was the interior of the building which like several females interviewed she said that she could "relate better with… like residential, offices, hotels". Overall she complained of the workload and how overwhelming it could get. She said,

> There is so much workload, you feel like destabilized by the work not knowing how to move forward but when I see everyone working, I get motivated.

For Chide, her performance was not very encouraging and at the end of the first semester of her 300-level, her cumulative GPA of 1.95 placed her in the third class division. From her LCI result, she was found to be a bridge learner able to use all processing patterns when needed and intensified. This implied that she had the potential but needed to generate a great deal of effort to get her work done, which unfortunately she couldn't get herself to do. About 300-level, she said,

> When I first started it wasn't … (shaking her head to show displeasure) but from 2nd semester, it was okay.

Though very concise, this response was loaded with meaning which could be read from many other things she said showing her disinterest and how stressful her experience was. About design, her response showed that she was not willing to intensify her efforts to do something unfamiliar unless just to get by. She said,

> Housing was easy, but recreational, is better, more interesting than housing…I do put myself in, but like 50%". I don't really enjoy structures, the calculation is too much and then when you look at it, you don't really need it in the future, if I put my mind …it was easy reading for the exams, it was very easy.

From this response, it could be seen that a lack of interest and effort was responsible for the past failures in structures. In classes, she was observed to always come late and tended to sit towards the back of the class not paying attention. For Building Components which meant site visits, like Chinwe, she remarked,

> I can't handle it…it is also stressful; my passion is for interior…No I don't participate. I prefer coming to ask the lecturer personally, because sometimes in class you get discouraged by people. You can ask something and everyone is like murmuring making you look like you don't know.

This was similar to the response of another low-achieving female in 200-Level, who said she didn't like asking questions because It seemed like *"you are drawing the whole class back"*. Chide further confessed that she never actually got to ask any lecturer for personal explanations, which established the fact that she was greatly disconnected from learning in the class. When asked how she learnt in the face of all this, her response was,

> Sometimes I browse or ask my course mates later… I don't answer questions, I just feel like there can be something better than my answer.

This connoted lower levels of self-confidence often reported in females (Sandler, 2005). She however said she learnt best in lectures where the teachers explained well with pictures and if the teacher was friendly to her. Her daily routine was to wake up, come for class but at exam periods, she focussed on studying and doing studio. She did not have a social life and described architecture girls as hardworking. Her dreams and aspirations had dropped from 90% at 100-level to 50% because as she said,

> The stress is too much. I want to do it and get over and go into…masters in interior design…I could stay all day trying to think of how to decorate a place.

Her major interest in architecture remained the creativity, while her major discontent remained the stress of assignments especially studio design.

(iii) 400-Level

At 400-Level, a more thorough mastery of architectural principles learnt at 200 and 300-Level is expected. A level of professional and technical expertise is also expected since the students would have undergone a mandatory period of pupillage and industrial training in an architectural, construction or related firm. Courses like Building Quantities, Professional Practice, Nigerian Traditional Architecture, Law of Contract and Tort, Building Information Modelling and Research Methodology are

also taught. For their Design studio, knowledge of Components and Structures are expected to be incorporated and the students are expected to be able to produce complete detailed architectural working drawings. At this level, also, individual architectural ideologies or preferences begin to emerge among the students as often noticed sometimes in their designs or in the independent research projects submitted to obtain a bachelor's degree in this terminal class. After this level, the students are at liberty to go for their Master's degree in another institution of learning or to go for the one year mandatory National Youth Service Scheme before returning for the Master's degree. Students who graduated with a third class degree are expected to undergo a period of pupillage as specified by the NIA/ARCON before returning for their master's degree.

Kayode and King, both high performers were well- known to be diligent with their studies. Kayode, a masculine and very strong willed learner was known to be performing well in his studies but compared to King an androgynous male and a strong willed learner, he did not seem to put in as much especially towards the end of his study enjoying the grace of his earlier cumulative performance. King, who was extremely high in sequential processing, shared his experience in the following words:

> For alpha semester, I felt like there was not much work…I'm not a new student, I already knew I was going to do studio, tackle my structures, my components…it was easier for me because I had fewer courses to do. Now for omega semester…if not that we had this CLD…I think I had only like 7 courses. But…like in this school we tend to push everything towards final year it makes the whole thing stressful …we had project to do, your design, you have other school activities.

The fact that omega semester was more hectic was confirmed by Kayode another high-achieving male in the same level who said,

> Omega semester 400-Level was more challenging because of the volume of work we had to do, project and the school activities and limited time.

King, however, said he was able to excel because he had personally purposed from his 200-level where he redefined his focus that he was going to stand out as an architect. Having an understanding that architecture comprised of drawing and theoretical courses, he developed a personal time table, which he said he strictly adhered to in order to accomplish his school activities like reading which was scheduled between 2pm to 9pm and drawing from 9 p.m. to 1.00 a. m. To corroborate this, he was

observed to always be present in the studio in the early mornings and stayed on even when they were not having classes and others had left in the afternoon diligently busy with assignments. It was thus not surprising, that he was always able to meet submission deadlines with commendable work. He summed it all up by saying,

> I don't like doing rush work so I try to start on time, most times I meet up…to my satisfaction".

Kayode on the other hand, said he preferred to work in the hall of residence to get maximum output. He described his daily working pattern and said,

> I come to attend classes, and then if I have assignments, I write it down. Then when I get back to the hostel I will review what I have to do like the assignment I have to go and do it.

He said it had not been in his practice to work in the studio for the reason that he didn't like distractions of any kind while working.

> I don't like it when my working area is crowded, so I like having personal space around me and I don't like when am working and people start interrupting me and asking for eraser, one takes the set square and I have to start moving up and down to get it.

For both Kayode and King, despite the common challenging situation they faced, they had obviously stabilised and had developed the necessary self-confidence and self-efficacy with an understanding of their individual ways and ability to self-regulate their learning and generating work good enough to earn them their high achievement.

Both high-achieving females in this level of study were androgynous in their gender identity and were very dynamic learners with one thing in common which was their purpose, resolve and determination to succeed. For Lola, the experience of studying architecture in 400- Level had been easier in the first semester and tedious, difficult and stressful in the final omega semester particularly because of the unfamiliar design module.

> In 400-level, alpha semester was easy everything we did I understood…this semester, I've gone through a lot…urban design module…never done it before, that one It's very difficult. It's like you are doing everybody's studio…we were supposed to design the residential, the industrial, so it was more tedious, but for my alpha I did an apartment building with10 floors and it was ok .But…the stress, just this session alone, I've never experienced it like this before…I really want to study architecture. I enjoy doing it. It's just…I don't know but this semester alone, the stress maybe because of the whole NIA and then pressure from school.

Despite this stressful experience, Lola managed to develop a pattern to work and be productive. She normally rested during the day so as to be refreshed and stay up all night which she deemed a better drawing time than daytime because of fewer distractions during the "great silence". She was not used to doing two things at a time hence she was not prominent in extra-curricular activities because she felt she would not be focused, which was her main resource and secret of her higher achievement. Love, her other colleague also described the session as not different from other levels meaning she had developed her own method of self-regulation prior to 400-Level. The Omega semester, she said, was more difficult because of the volume of work they had to tackle. The previous stability, determination and strength she had attained was what however helped her through the final pressure. She said,

> From the beginning of the session it has been quite the same as the other levels until it got to the final level because we had project and the final studio work. We decided that since this was our final studio work, we had to work extra hard than we did in previous ones so there's more pressure on us to do better, it's more difficult generally.

Talking about what made design work done, she explained that she was gifted in doing preliminary research for design, she said,

> I think I stand out in the sense that am able to find out, do all the preliminary work. It's easy for me to carry out preliminary work and then because of that it's easy for me to go about the design and I think my design, it's …I wouldn't say it stands out but I try my best.

This modesty as described by Heynen (2012) was seen in her downplay of her abilities when describing her talents. The conclusion about both females however is that despite the very demanding nature of that particular level of study and their naturally demanding learning schema, they were still able to self-regulate their learning by forging, intensifying or tethering their natural learning schema to maintain their high-achieving academic status.

For kola a masculine low-achieving male in 400-Level, the description of an architecture student went thus:

> The ideal student should be patient and should be able to persevere because architecture is not for the weak at heart; it is for the patient and hardworking student".

His experience of 400-Level could be summed as disappointing or unfulfilled where he made major input but got little output. He said

> It took so much, but then I produced less…there was less outcome after the time given to me".

Specifically about 400-Level he said,

> It was extreme hard work…Alpha semester it was ok, because I planned everything but I couldn't achieve all…. There were ups and downs, unexpected results. Omega semester, design was my best…because I took my time I paid attention to details; I did everything so I think it's my best. I took my time and I planned my time".

It was interesting to note however that despite his described effort it was discovered that he got a D in that design. From observation over the semester and further prodding him about design, the cause for his low grades was not far-fetched. The main reason was that he was never patient enough to analyse his briefs, preferring to proceed to design straightway, pursuing aesthetics at the expense of functionality and spatial effectiveness and failure to work with his studio mentor. Describing himself as not a very patient person like the typical male he described who was more after form than function, he said,

> I think a male student is generally faster knows what he wants and generally tends to watch time in everything. Most times his design problems come because of skipping some necessities and principles…the functionality of buildings and interrelationship between spaces because most times, like I for one when I have my shape, I tend to project my elevations before I boil down to functionality so most times I don't have time to look at the functional aspect.

This self-description given by Kola could be confirmed by his LCI score which was lower in Sequential than all others and really high in Confluence. The implication of this high score could be confirmed by his rush to give a creative design at the detriment of other weightier factors even employing CADD which he had great flair for without proper architectural programming. His poor disappointing performance was thus as a result of inability to self- regulate his learning abilities by tethering his confluent and technical processing abilities and intensifying the sequential one. He failed to acknowledge that without proper architectural programming, the most aesthetically appealing buildings would be a failure. This tendency of his was described by Franck (1989) as the masculine tendency of separation as against the connectedness that women are argued to possess.

For Linda a masculine, low-achieving female student, the experience was wonderful. When asked what wonderful meant, she explained that it was because of the progress she had made.

> 400-Level architecture… its being wonderful. I've been learning compared to when I came in 100-Level until now…. I've learnt a lot and for all my courses, I'll say I've had a good time because I like to learn which is a good thing. My only issue has being with studio because the time frame, the workload and all that…I like to think that I've grown and I like to run after my supervisors a lot to get their correction so that I will know what to say in jury."

Her description was apt as it was observed that in her final year, she had become more lively and confident in her disposition and seemed to have acclimatized to studying architecture, which was also corroborated from her narrative,

> Between 100-Level and 300-Level I used to be very tight and I would just sit down and because we were learning how to be ladies, then we were growing up and we were also learning how to be good students and you have to be a lady, you have to sit down and cross your legs watch the way you talk, you have to watch a lot of the things you do then I used to be very quiet… I realized that I had to relate with everybody in my class to get something from everybody".

The latter part of this response showed that on realization of the necessity of personal responsibility for learning a change in attitude was triggered off which eventually helped her performance. Her designs and CGPA had drastically improved. Specifically about design, she said,

> My first design assignment was terrible…I was in 100-Level I didn't know anybody, I just did something I thought was good, when I got to class and saw what others did, I hid my model.

In fact, in her judgement, her alpha 400-Level was the best, "my jurors…they liked my work" she remarked, even though her site plan was not complete. Her level of confidence had obviously soared and she had learnt to relate better with her supervisors especially in her final project and her speed in design had improved. Even though she had attained a perceived level of maturity, she confessed that design still posed a challenge. She said,

> Well I was looking at it.my studio work, I don't like the fact that I never actually finish even if I start from the beginning of the semester. If only we had one semester to do theory and one for studio…because I am slow in drawing, I like to take my time when I am drafting so that everything will be…I will measure everything so I will be able to defend my work properly but then I'm trying to juggle classes with assignments and with everything. I

> know people do it but for me that I draw very slowly and I take my time to be drawing I don't find it very easy.

Like Boye in 200-Level,she said multi-tasking was herculean which could be understood considering her dynamic learning schema which required her to put in great effort to switch between drawing mode and lecture mode even if she was tired as shown by the LCI. Whatever the case was, she did not relent

> After a long day, by the time you get back to the hall, you are so tired you want to relax but… If I face drawing alone, yes the semester I stayed back in school for one week - the multi-use building…within that week, the only thing I was doing was design. I designed a building, a multi-use building. I did a floor plan, the elevation, the section, the details in one week and I drafted it and I had a C, something I did in one week, so if I had a whole semester that I'm not doing anything else. Just design…"

Despite her expressed challenges, her positive attitude to learning and persistent desire to work greatly helped her to self-regulate her learning despite her perceived limitations. Combining this positive attitude with her masculine schema possibly gave her an edge by helping her to have a control over the outcome of her learning as found by Choi (2004) who found that androgynous and masculine people found it easier than the feminine to control the outcome of their efforts in academic settings.

For Lade a low-achieving student with a feminine gender identity in that same level, the experience was tagged sometimes very challenging. Initially before coming to study architecture she thought architecture was a course comprising drawing buildings alone. She said,

> "I thought architecture was just building drawing and designing…until building components started showing us learning properties of this…that. It was annoying at first then I got used to it.

When asked about the level of difficulty, she said,

> It's all about personal taste and interest...I remember my 1st design, farmer's house. I remember very well, I really liked my design and that was the first studio I remember being very ready to submit. It was very interesting for me. It's challenging sometimes, like now (in 400-Level), am designing a 3-star hotel, it's very challenging for me. I've changed my design like 3 or 4 times but It's all about interest, like this hotel now I was very interested in doing it cos I've not done something like this before. It's challenging and interesting."

She said she enjoyed residential buildings… because of the intimacy in the building. "It's not so big… each space has individual concepts" denoting connectedness, a feminine virtue while designing buildings as described by Franck (1989). Lade said

her zeal for architecture had reduced drastically to like 60% as against 90% in 100-Level because of the stress. She said,

> Maybe just for me personally, it's the time because I'm very slow with design so the time is not enough for me…like this semester more time was given to us, 3 weeks. I added lots of things that made my design better. Jury for me is difficult because most of the time I don't finish and they are usually tough on me. I've been moved almost to tears. Right now I've worked better, over time I think I have gained speed… I like the outcome, when you see your design you are so happy.

About other courses, said she preferred courses where she could see practical examples like building components. Site makes me understand better. She said Structures is difficult, I' m not a big fan of calculations and about graphics she said my graphics are not the best. For Lade, it was obvious that the attraction she had for architecture could not be sustained by her very dynamic bridge learning schema according to the LCI. Like the typical feminine person suggested by Choi (2004), she could not self-regulate to control the outcome of her learning. First, she loved only the challenge of design, which she often could not resolve in good time especially as she advanced with the study. Secondly, she had some form of interest only in practical things like aspects of building components and doing hands-on things like architectural design which entailed much more than ordinary design for design's sake. This could be seen in her score in technical processing (24) which despite being the highest of the four patterns was at a level that needed to be intensified (use as needed). Lade could be described as not to have a fulfilling experience because though at 400-Level obviously had neither attained stability nor clarity which most attained at 300-Level, as attributed to her level of study by the findings of Lueth (2008).

(iv) M.Sc. 1

The first year in the master's class is called M.Sc1. The Students are at the start of a professional degree and the approach taken thrusts major responsibility for learning towards the student. The main test is the ability of the students to carry out independent research and academic work. Course work involved teaching of advanced architectural design, building components and methods and building structures, acoustics, lighting and illumination, Cost monitoring and Planning, building specifications and Advanced Building Information Modelling. For Ope, a

studious male student in MSc 1 with a masculine gender identity, the experience as shared, was different from that of the undergraduate years. Ope said he had never really found things difficult in school of architecture "…maybe because I like to draw", but of Msc1, he said,

> There is less instruction and more freedom of choice as to how to go about certain things…yes I like it and there's more of individual research forcing you to find out things and it sort of makes you responsible for your own education.

When describing architecture in general, he said,

> It is about solving problems…being ready to think…it requires a lot of social interaction…connecting to other levels…me I realised that sometimes I used to stay too long on a problem…trying to solve it myself alone. I've just been learning recently…it's good to have it but it does have its drawbacks, sometimes like a problem you could have solved simply by asking somebody. You would have thought around and around…but you bump into other ideas that could help you improve even though it's a longer process."

The main challenge that he faced in MSc 1 was at the beginning. He said,

> The transition between BSc and MSc, there is sort of like a gap in the sense that we were not expected to use CADD that much in BSc. Then we only do a course in Revit, then suddenly…in MSc you find …they are expecting us to present our work in Revit and you are expected to know CorelDraw, Photoshop or any medium…. Last semester, I tried to do something I figured it out in some ways and as I got used to the software. I found out there were easier and better ways…and it was taking longer. The department should provide a crash course…as against go and figure it out.

This figuring out on his own, trying out what he had learnt that he always tended to do was a strong confirmation of his high technical (31) and confluent (28) score in the LCI. Ope was known for being focussed in his studies and was known for being very inquisitive and loved knowing things which was also an evidence of his proficiency in precise processing. He was always observed sitting at his desk by the window in the studio till around 6.30 p.m. daily or sometimes beyond. Having a high level of self-efficacy together with being studious, personal interest and motivation were his secrets for success and this evidently confirmed his strong-willed learning schema as found from the LCI test. He stated that he was really enjoying studying architecture and confidently shared his personal convictions that helped him succeed. In his words:

> I'm interested in it…I also believe in personal development. Lecturers might mention something in class but it's still up to you to educate yourself… I believe that if you are doing something you should gain from it…try to relate knowledge…If you learn something…try to imagine how you could use what is been taught in your design.

From Ope's submission, it was obvious that over the years, he had attained a greater level of maturity (Chickering & Reisser, 1993; De Larrosa, 2000) as a masters student and was to a large extent more able to self-regulate (Powers, 2006) his learning to achieve the desired goals. During his undergraduate days, he was known to be a very slow starter especially in the design studio. On one occasion, he was observed to have spent almost the whole semester trying to understand the design brief, analyse and carry out preliminary research, sometimes spending days trying to resolve a design problem on his own. More mature now and having understood the necessity of interdependence on others, he was more efficient and faster in solving design challenges. He could be said to have experienced the transitions

For Janet, a high-achieving feminine female, when asked to described her experience, she progressively traced it from the lower levels and expressed her views thus:

> Yes along the way it became very stressful and hectic and most times like from 100-Level, I always had to meet 400-Level boys. 100-Level was really good and then 200-Level that's when design started... In 300-Level, the things I really had problem with were structural issues. When I had to do a plan that needed me to be concerned with structural elements, it was harder I had to consult a lot of people. Msc 1, Msc 2 left, right and center. Sometimes I got frustrated and I was wondering why I studied architecture although after finishing the design at the end of the semester, you will feel good, you will feel ok.

When asked what her experience was like in MSc1, the beginning of a professional degree. She responded using the following words:

> It's a lot different…because for one using a different medium like using CAD, my designs have become easier like from 200 to 400- Level…. My MSc design has being the easiest so far…. CADD has helped to make my design easier because I can visualize my work and still edit it quickly because if you are drawing with pencil. Once you draw the first stage you are too lazy to start erasing and redrawing especially for girls and most girls don't sketch as much as boys…. The courses are more detailed basically and there isn't much difference at all…the sense that I am closer to real life is there. I actually feel I am supposed to be doing more advanced things in MSc than I am doing now…housing studies…we enjoyed it so much…specialization, landscape design that's like my favorite course.

Her daily routine saw her always rising early to work as that was the best working time for her after which she came to class and stayed till evening because as she learnt, the best way to learn architecture was to interact with people showing them your work for cross-fertilization of ideas, which has been a great source of help to her good performance. Janet also from her experience could be described to have passed through the transitions and overlapping progressions of stress, hectic work, frustration and clarity to attain maturity. She had learnt earlier than many others that self-regulation by interdependence on others was a key ingredient in stability in learning design.

Another high-achieving female, Jola in M.Sc 1 corroborated that design became easier in MSc 1 when they switched from manual drafting to the use of CADD. She said,

> Design has improved with the use of CAD and it's easier for me to use CAD than drafting. It's easier because the whole stress of measuring, trying to be accurate you don't need to go through all that.

The impact of CADD usage in MSc1 on her seemed tremendous and was really noticed when she was speaking about her zeal. She said

> My zeal in 100 level, maybe 20% or 30%. I didn't really have the zeal. I just wanted to practice but now my zeal is let's say 70%. In M.Sc. it has increased…because of the ease because of CADD. I'm not as stressed out as I was in lower levels. I am more motivated because I can do a lot of work on my system without getting tired…CADD is a miracle, it's a blessing especially to the girls.

Jola was found from the LCI to be a strong-willed learner but surprisingly she was found to avoid technical processing. This meant that she did not always like to involve herself with understanding the mechanism behind things and was more prone to solve problems by collaborating with others (LCI, 2004). This was corroborated by what she said

> I like architecture, it hasn't frustrated me because I have friends that encourage me…it's not a do or die affair for me. I can mix up if I have problems I can easily get them solved.

Her love or zeal for architecture was even clearer as she explained what excited her about studying architecture.

> The fun part of architecture is the team aspect especially studio is one part that if they take out of architecture, there will be nothing more to it. Studio is a course that makes me excited. I'm not even bothered about what I'm designing. I'm just interested in what I'm putting into the design, so architecture, what excites me is the fact that I can go round, find out, get inspired, go online, browse for stuff, look at people's design, ask them how they were able to achieve this design so that's what basically makes me excited about architecture because I can meet people.

Jola said she did not think that talent was what was responsible for her high-achievement as she explained,

> I don't think am so talented, because as I was saying, I'm not the drafting type... but then I like architecture because…me I like learning new things and that I can go the extra mile to get something done. That's just the attitude I've come up with. The fact that I am very zealous…I don't procrastinate… so I think it's the zealous aspect, focused aspect and determined aspect that has helped me.

Oba was a male student but feminine by gender identity. Oba explained that he had been constrained by his performance in his O' level examination to study architecture because he failed chemistry, a prerequisite for chemical engineering that he originally applied for. His original perception about the course before coming to study it was that it was a course for fine artists and he had to push himself hard to be able to scale through his BSc. At the MSc level, he described the experience as being competitive and he scaled through his first year by doing just what was expected of him, though getting deeper, it became increasingly challenging and in his own words, he said. "*With time I got to understand better"*. Observing his activities, he could not be described as very connected with his studies and manual drafting seemed herculean for him but CADD and design were the highlights of the study for him and manual drafting was herculean.

> With CADD, I was able to come to terms with architecture…Design excites me but preliminaries in design and deadlines frustrate me

His flair for practical activities confirmed by his highest score in Technical processing (25) and the fact that he avoided sequential processing(17) suggested that he could actually have fared better in another profession that didn't require following approved principles or living by a schedule because compelling him to Forge any of this abilities was found frustrating. This was confirmed by his saying that he disliked being taught practical things by theoretical means. His poor performance relative to his peers could be explained by his love for practicality alone and not being able to

subject himself to follow the necessary steps in design studio and other courses. Not being fully focussed and his love for socialising were a danger to his very dynamic learning schema which certain aspects demanded forging or intensification by self-regulation to enable him attain higher academic achievement. Unfortunately, Oba like most people with feminine gender identity could not control the outcome of their academic endeavours (Choi, 2004) hence his poor academic achievement.

Julie was 21 at the time of this interview. She was a feminine student by gender identity. From her cumulative CGPA of 2.75, she was the second of the two least-achieving female students in MSc 1 that session.

Describing her experience so far in the school of architecture, she said

> At first in 200-Level when we started the main architecture, it was very difficult, I was lost but people around me helped me…I like what am doing and it makes me push myself harder.

What she liked best about architecture as she said was the interaction among students and she liked jury least especially the subjection of design works to criticism. Yet, she was not so good at interacting outside her circle of friends.

> I don't like interacting with people am not familiar with so I used to meet my classmates to help me meet others.

Being a dynamic learner who was highest on sequential and precise processing which showed up in her love for structures and building components, she needed to intensify her other processing patterns. Talking about specific courses she said,

> Personally I like structures and part of the knowledge I can apply. I think Building Components is very important and graphics…I am not so good in graphics.

About architectural design, she confessed that she was not always able to resolve design issues on time. She seemed to have lost interest in architecture generally with her zeal for architecture waning due to her changing goals.

> Well, definitely my goals have changed. In 100-Level I thought I would just be this big architect and go and do everything but now I have narrowed it down. I know I want to focus on residential so it has changed a bit for now…my zeal, its lower…because being in the department, seeing things has taught me you can't do everything. For someone like me, I know that I should focus specifically on one thing.

For Julie, that one thing would be interiors based on her interest got from watching her mum.

> I would like to pursue interior design further…I've not really had experience in other things but with what we've been taught, I think I have a flair for interior…I think it comes from my mum, around our house she's always changing everything buying new stuff, maybe I took it from her.

Also for residential design, which she had the greatest self-efficacy for based on her best design jury so far

> My best jury that was in BSc with my residential, when we designed an estate…I think it was very good.

From her semester's performance, she failed design and had an A grade in Structures, confirming her passion for structures. The reason for her relatively low performance could not be readily ascertained from observing her and could only be suggested to be her poor performance in design and inability to resolve design challenges as she had suggested earlier in the interview. The least-achieving female student in that level of study, Joy failed to turn up for the interview after several prompts, hence not much could be said about her apart from observations and her written responses to the open questions in the questionnaire. The first thing that could be said about her was that she had struggled with design from her undergraduate days. She said she had been forced to study architecture and with no background in Technical Drawing or Fine or Creative arts, she was struggling with drawing of any type. In the master's class, during the first semester, she failed several courses and at the end of the session, she withdrew from the course for purposes best known to her alone.

(v)M.Sc 2

M.Sc. 2 is the second year and terminal class for the professional degree. The work is mainly independent, research-oriented and practical. Students submit entries for a life-project and also work on their final thesis, which comprised an independent design project based on a related research report conceived by the student and guided by an assigned supervisor. Dennis could be described as driven, purposeful and determined even in the face of limitations. He was a high- achieving androgynous male in M.Sc2. Dennis said he had been drawn to architecture because of a yearning to study a course, which would express creativity. Despite his natural flair for freehand drawing, he initially faced a major limitation of expressing his design ideas

by technical drawing because he had no academic background in it. Sharing his own experience he said

> It was in 100-Level that I had challenges because I didn't do technical drawing unlike most of my colleagues. I had no idea… so it was a struggle because most of the work was based on Technical drawing. At 200-Level, I had acclimatized and by 400-Level I was above average… not on 2.1. To move upwards, I had to re-organize my priorities and focused more on what was important for the moment. As an undergraduate, I had distractions…wrong company absorbed a lot of my time.

Dennis described the lifestyle of an architecture student, and said,

> It literally revolves around the design studio but beyond, architecture involves absorbing skill and knowledge that will allow you express your creativity again in 3 dimensional spheres as per building…I think it's quite challenging and anybody that wants to do it will have to make up their minds that they truly want to come into something that literally takes their lives… it takes a lot not everything.

From observing him at MSc, the privilege of using CAD and other computer applications covered his limitation of not having a background in TD and helped him greatly in his architectural presentations in the masters' class. The secret of his success and finishing really strong and with a distinct performance in his MSc class was summed thus,

> I became more studious, not quick rush approach of B.Sc. days. I don't have any active social life because the time design takes is quite much… going outside will make you become choked and stressed.

David another androgynous, very dynamic learner, high - achieving male in his level also confirmed the needed focus for their level of study by his own experience. From observing David over the years, it was obvious that he loved architecture. He described his experience progressively highlighting what every level was about and specifically about masters; he said MSc 1 was a level where you begin to gain mastery of architecture.

> M.Sc 2 has been quite hectic in a way because of research project and design and we are still on the research design project at the moment and it has been a wonderful experience.

David was a very dynamic learner highest on precise processing which meant he loved knowledge, accuracy and correctness which could be corroborated by his professed love for components and structures which he understood well to the extent of incorporating them in his designs. Being a very dynamic learner, with lower scores

in the other patterns; he was able to intensify on those processing patterns by strict self-regulation. Like Dennis, he confirmed that architecture students don't have much time, so he spent most of his free time in studio than in the hall. He was known to be a diligent student with a passion for architectural design, which was one of his strongest points. He corroborated this by saying,

> I try to spend some hours on studio work or on architectural stuff everyday…like 2 hours at least even when there is not much work just to keep moving.

from the hectic nature of this level, David seemed to have gained confidence, stability and clarity as an architecture student and was waiting to graduate and move on to other things with his aspirations, which he said at that moment was much taller than at the inception of his studies with his inspiration drawn from lessons he had learnt from the way architecture was being practiced outside Nigeria.

Marian was an androgynous high-achieving female with a very strong-willed learning schema. With what one would term the most-advantaged learning schema and gender identity, the challenges seemed to mount for Marian on resuming in the Masters Class. When asked for the reason, she said,

> Okay, it was more difficult because the media for expressing our drawing had changed to computer and I wasn't so conversant with the computer so I actually… I was finding it difficult at first… that was my challenge, aside from that, design-wise everything was okay… I took it one step at a time. It was a bit difficult to adjust but over time even with the whole rush, the rush too, I knew myself that I needed to go outside and really go and learn it but you know when assignment upon assignment everything there was no time to really adjust well but at some point I really had to not rush with the class so I had to stay back, I had to work at my own pace, learn the software, and know what I had to know. I learnt it on the go… it slowed me down.

This described experience and some other issues that could not be pin pointed by observation or interview lingered into her MSc 2 and eroded her self-confidence and self-efficacy and greatly retarded the progress of her final thesis and pushed her to nearly postpone her final Thesis defense because she felt she was not ready and was going to ask for an extension of time after pinning up her drawings. She was however not allowed to withdraw from that jury and was still able to graduate with a good overall grade point average. From her discussion, it was obvious that one thing that made studying architecture easier for her at first was the fact that prior to coming to study architecture, she had seen lots of building construction works taking place, so

she could visualize in 3-dimensions. Coupled with heeding the advice given by her dad, gave her an edge and helped her to interact freely with anyone who could help her thus helping her to scale the more difficult times.

> The reason why I think I've been able to overcome some design challenges is because I move a lot with guys. My friends, most of them are guys. So I always look at what they are doing…even when I got to MSc where I had challenges with my software, they helped me, whenever I was in studio I would go and sit with them and sometimes stayed overnight if I had to. I was just gravitating towards those that could help me rather than chit chatting with girls.

For her, the most turbulent times, seemed to come at the end of her study but the interdependence and stability she had earlier developed coupled with the very strong-willed schema that she possessed were what helped her overcome these challenges. For Monica another high-achieving female in the same level said that MSc 2 is about CADD which she liked, she loved graphics, Even though, she was good at it, she said she had no desire to excel at it or anything else like boys who were so enthusiastic about it. Nearing the end of her professional degree, her feeling was highly transitional.

> As of now I just want to get it done with and leave. Initially when I came, I had this mindset of winning the Pritzker award and things like that, right now…I've enjoyed architecture so far but right now there is a lot of work to deliver and deliver and deliver that's all what they want us to do… I plan to practice in a firm then startup with civil service then owning a firm with a group of people but I just want to stay in architecture for a while. I intend to branch into other areas… like hair and make-up.

It is obvious that her passion for architecture had been shaken or modified by her school experience. She further said that her passion for architecture at the beginning could be rated at 95% but at the end where she was at that moment, it was only 65%. When asked why. She sighed deeply and said,

> The workload, a lot of things, then I discovered, I submit something, then it's not my best, if I was given more time, if I had done it longer, I would have actually done it better than that…the stress, the workload, the tension, the pressure…all makes me very tired.

Her dynamic learning schema, which was strongest in sequential and precise processing that she had greatly forged and intensified towards other patterns to accomplish her learning tasks over the years also seemed to have contributed to her feeling of tiredness. It seemed she was pursuing an unattainable goal from which she

just wanted to be relieved. This feeling of tiredness or wanting to relax totally could also be seen in Marian's case as described above.

Donald, in MSc 2 was a strong-willed learner. Donald revealed that he came to study architecture for love of building construction gathered from working experience on building construction sites prior to his coming to study architecture. Originally in the BSc, he was observed and known to be very restless and not very committed to his academic pursuits, hence his poor performance. He went out to work before returning for his master's degree, he had to go and work to remedy the third class result he obtained at BSc level. Sharing his experience while studying for his masters, he reported that he had made mistakes while studying for his BSc and wanted to avoid a recurrence. In describing architecture, he said,

> Almost everything in life is about architecture. Architecture as a course does not make you just an architect, it makes you more than that; it expands your creativity, you thinking ability. Even if you want to go into fashion and anything like that, architecture reflects in it. I worked for a year and I was not serious in undergraduate days. I actually cannot say why…. I had to step up the game in MSc 2 because more is expected of you.

While his self-reported improved focus could be corroborated, he could not be said to be fully focused because he still had a penchant for other extracurricular activities and remarked,

> To meet up, we have to balance our work with the social life.

This lack of complete focus resulted in his academic performance being far below that of his classmates. Despite his strong- willed Learning tendencies he was unable to harness this to his advantage. When he was questioned about what he liked best about architecture, he replied and said,

> It's a practical course; you can see what you do.

This could be corroborated by his high score in Technical processing and professed love for construction of buildings, and preference for practical courses such as CADD, building structures and components which he said really helped his understanding more than theoretical courses in his master's studies. He said he didn't like the fact that the course was very capital intensive.

The other low-achieving male in MSc 2, named Dare was androgynous and was a dynamic learner who needed some intensifying and of his processing patterns to get

things done. Unfortunately, he could not supply the needed energy because his focus was broken. He said

> Personally it has been tough, there have been serious times, there have been unserious times…sometimes when you are growing up its difficult to know what you want…you can get distracted because you are making money from some other businesses but at the end of the day… (Shakes his head)

The reason for his wanting to earn extra cash was not to fend for himself but just to meet up with peer expectations. This mentality was what made him often leave school looking for business opportunities and not put in enough time and effort into his studies. What he loved most was building construction, because it was more lucrative, and what frustrated him was design workload….despite which he had a vibrant social life. He said

> An architect must go out have a social life to make contacts, and advertise his business, have a drink.

At the time of this interview, Dare declared that His zeal for his studies had dropped from 90% at the beginning to 50% because

> It is getting to the real world and it's not as easy, I want to go into building supervision that's where the money is.

For Mandy, a low-achieving female with a very dynamic learning schema she shared her experience of MSc 2 among others. She described architecture in the following way by relating it to her performance.

> Hmn my performance in school of architecture, I have not actually been satisfied with things. It could actually be better…I actually feel that I put in, enough efforts most of the time… Maybe, maybe erm, maybe, I wouldn't say lack of drive. I know to study architecture you need to have…One a passion, two you need to have like … There just has to be like an inborn talent for … one of these things, creativity, like you can actually …, I wouldn't like to say made for architecture or anything, but like someone that wants to study architecture or that loves architecture or you need to have to sit down on your own and just start designing like that, you must have that natural you know flair for it, and I don't know if I, I don't think I had it. It was yes a lot of hard work, I didn't have this natural flair for it.

Despite not having this flair or seeing a great output, Mandy said she really loved architecture. She went on by saying,

> I love a lot of things about Architecture. Okay, I think I like the fact ... It teaches you how to multi task because you are doing so many things at the same time. I love that aspect…I also love the aspect of creativity. You know,

> just creating... you know there are no two designs that can ever be alike. You can't say you copied somebody; everybody's work has to stand out. So everybody is like using their brain to bring out something. We are answering the same question but at the end of the day, you see this one, you see that one, you see that one...I think that's the area of architecture that I really like. The design…

The most frustrating thing for her was expressed as the workload and the fear of jury

> "First and foremost, the huge… or the large tons of work that…You just have.. as in so much work to do, and you just have to deliver in good time and.. And your design, it has to be detailed. You are not just looking at a big box or a big space, everything... inside it sometimes and then they take too much... I felt the ratio of work was just too much. The ratio of work to the…I just felt like the work was the burden …, you know, it was just too much for me...
>
> When we are approaching jury, it's always... in the sense the thing I used to fear the most or the thing that makes me really jittery and all… it was just finishing and all. Sometimes, when you are prepared, when you are ready, it gives you a level of confidence and all. And then when you've worked so hard, and you're still not ready, it would.. it could.. you know.. give you a lot of thoughts and.. so, my high moments, after working really hard and not having much confidence but still coming, and then the jurors would come by, see your work, and then everything will just go perfect as well.. For me that was like a sigh of relief, but low....lowlights.. I don't think I've really had maybe like a nasty jury experience like maybe they saw my work and … I really.. I think the lowlight still comes from the experience of preparation, when I'm working so hard, and I'm not getting a lot of work out of putting a lot of effort. It makes me very sad.

Martha another low–achieving female in MSc 2 also When she was asked to talk about her experience in the school of architecture, she described it by saying,

> It is stressful and it has to do mainly with creativity, once you have an idea of what you want to do, it's really stressful, you can keep doing it without it being so much of a burden and then (hesitating), the whole doing better than your peers is not so much there because you do what you feel is right".

From her narrative of her school experience and general observation, it was surmised that she was just beginning to discover herself or "stabilizing and creating a vision for the future" as Lueth (2008) described at post graduate level. Also, she seemed to have been able to develop better interpersonal relationships (Chickering & Reisser, 1993) which helped her performance. Specifically about MSc, she said,

> In BSc we were a lot, more than MSc…most people didn't know what they were doing. We got into architecture for different reasons; there was never a sense of what we were doing. Nobody knew that after BSc you have to do MSc. You have to get accreditation, never knew that but in MSc you are more

> aware of issues around, issues that relate to architecture…you are more aware of where you are going…architecture has brought a bit of ruggedness in me.

Specifically about various courses, her recounted experiences all pointed to a struggle which she agreed with. About design, she explained,

> I am more inclined towards functionality…you do that a lot, think about the users of the building…I have to think more than most people…it's not about the flair, I have to understand what am doing, really understand and really connect with what am doing and not just start it. Most people just start, let me build a block…but I have to really understand what am trying to achieve before I start…no I'm not really fast.

Building Structures she said had been "work" for her because she couldn't connect the course with design and reality. She was able to tackle the large volume of building components by teaming up with her female colleagues and for graphics and CADD; she had dealt with them by patiently keeping at them.

When asked how she felt being among the seven out of 21 females in her original level who returned for their MSc, she replied,

> Like most times you are continuing because you have a goal…there's no point in discontinuation.

Her not venturing into something else after her BSc, she said was informed by her dad's insistence and like daughters who are more deferent to their parents, she complied.

> My Dad wants me to be an architect and I don't see any other thing I could venture into.

This mindset was what made her to submit that what frustrated her most about architecture was,

> Simply because its time tasking, it consumes a lot of your time…it's a necessary evil.

One main thing that inspired her however was

> Seeing people work and seeing people talk about their work.

After much probing, Martha finally revealed that if she could choose, she would have loved "To be a child person, maybe have a daycare, and be with children".

This complete deference to her father's wishes at her own expense corroborates the assertion that females are more likely than males to defer to their parents' wishes and expectations. Despite her perceived academic weakness and observed poor academic

performance, she was known for struggling and persevering to forge ahead and determined against all odds to get her professional degree in architecture even in the face of all the setbacks she encountered.

4.3.4 Students' Perceptions of Gender

Several themes emerged from the interviews and narratives about students' perceptions about gender, these themes however defied a totally neat categorization; this was because they overlapped in several ways. There were themes about the present and future, there were those that connoted gender differences and inequalities, there were those that connoted biological and social differences, some themes of males and those by females, those that were borne out of direct observation and experience and lastly those that were based on stereotypes and those that believed that gender did not influence architectural education in any way. The first four sub-sections presented and discussed themes of students' perceptions that expressed how gender matters in studying architecture. The fifth sub-section discusses the themes that had to do with gender not being an issue, while the sixth one is a summary of this section. The broader consensus is that gender mattered and that females are differently situated and disadvantaged in the field of architecture compared to men. The idea that highly determined females could also cope in the school of architecture is also highlighted. The conclusion is that females that would succeed would need to put in more effort than men.

(i) Gender Matters for physical reasons

Many of the students were of the opinion that the female students were disadvantaged compared to the men in terms of physical strength needed to combat the rigours and demanding nature of the study. These views match the description given in previous works about architectural education (Bachman & Bachman, 2006; Corroto, 1996) which described the generally stressful nature of the course. Webster (2005) also specifically described the culture of architectural studies and the acculturation of the students to the hidden curriculum (AIAS, 2003), which included certain tacit and hidden elements that could be physically, socially and emotionally draining to any student (Corroto, 1996). The rigorous conditions mentioned included drawing bent over on drawing boards and tables for long hours, concurrently handling multiple assignments and generally heavy workload, which often entailed having several

sleepless nights (all-nighters) to be able to meet up with deadlines. Both male and female students also indicated the perception that the physical or emotional strength of the males exceeded that of females (Figure 4.6), consequently, the males by natural endowment, are more suited to withstand these rigours which was described as a "sacrifice to the gods of architecture" by Corroto (1996. p.30).

Men are physically and emotionally stronger Than Women.

"There is the difference in psychological make up between male and female species.as women tend to deal with sentiments more and men seem to see things from a more practical perspective." ***(Female 300-Level)***

"… is because of the ideology that men can handle more stress than women" ***(Female 400-Level)***

"A female is different from a male, anatomically. This matters in the study of architecture as males are naturally stronger in physical strength than women, that way they are able to do more tedious jobs" ***(Female, 300-Level)***

"When it comes to the physical "bruttiness" of architecture, the boys have the upper hand. They can go through any length to do well while girls on the other hand are a little vulnerable because of their strength. i.e. studio." ***(Male student. 200-Level)***

"Architecture studying has a lot rigours and stress involved and males are mostly preferable to study because they are stronger" ***(Male, 300-Level)***

Figure 4.6: Theme - Physical strength reasons.
Source: Author's Fieldwork (2014-2016)

This perception notwithstanding, it was generally seen that the stressful nature of the course could be conquered or combated by either male or female students by having zeal, passion, motivation and drive, which some females were also perceived to possess (see plate 2.4). This is evidenced by the increasing influx and graduation rate of females from schools of architecture (NAAB, 2015). This perception corroborated the findings of earlier studies (Bachman, 2006; Powers, 2006) which underscored the

need for self-efficacy and sheer determination to succeed in schools of Architecture. Some other students went as far as describing females who ventured into the field of architecture as being strong, focused and different from others of the same sex (Figure 4.7) as expressed by both male and female students.

…though some females too can be strong

"I think girls in architecture are tough… I would say yes [I am strong]" **(Female, 300-level)**

"[a female architect] is focussed, hardworking, determined, [girls in school of architecture] are not like regular girls, they are more focussed, don't waste time" **(Female, 400-Level)**

"… Some people look at it that with that amount of stress women will not be able to cope … but I've seen girls …. there are exceptions like the girls in my class. …I think they believe in themselves but talking about confidence I think the boys have more confidence…." **(Male, 300-Level)**

"Although the male gender has an advantage of strength, the will power and commitment quality of a female person in the school of architecture can get them to places." **(Female, 200-Level)**

Figure 4.7: Sub-theme - Females too can be strong.
Source: Author's Fieldwork (2014-2016)

Plate 4.1: Female students' acculturation to design studio
Source: Author's field work (2014-2016)

While this may be true, the critical ethnographic account given by Corroto (1996) argued that this ability by female architects to adapt to the culture of the school was

alien to the true feminine nature of a woman as defined by gender role expectations in the society. In her own case, she stated that her ability to complete her architectural training and even earn a position as an intern in the office of a star architect was like acting a masculine role in a script which conflicted with her true self. This perception was also shared by both male and female students in this study with the premise that the strength of a woman "*could not be that extreme"* like that of a man. (Figure 4.8)

…but Female strength can't match male strength

"Gender matters in all life's situations and not architecture alone so I believe that the individual's readiness to put in the effort required to achieve his or her set goals is more of a strong determinant in any situation than gender" ***(Male, 200-Level)***

"as a female architecture student…you have to have the ability of a man i.e. be capable of carrying out tasks in the strength of a man… I'm not implying that females are weak, but no matter how much no matter how much you think you can do a guy's job, you'll realise at a stage that you are still a lady and you may tend to have some complications when you overwork yourself" ***(Female, 300-level)***

Figure 4.8: Sub-theme - Female strength is less
Source: Author's Fieldwork (2014-2016)

(ii) Gender Matters for Social reasons

Responses of some of the students about how gender influences the study of architecture were related to social reasons, and gender stereotypes or paradigms. Though the gender composition of the school was a tilted group, many stereotypical generalizations about females and males were reported by the students. With respect to predominant Nigerian culture, architecture does not fit the traditionally acceptable role of women (Nwosu, 2012; Ogege, 2011). In pre-colonial Nigeria, in most cultures, it was men who carried out technical tasks like building construction, while women played other roles like childrearing, housekeeping and cooking and supporting their husbands in farm work. Other activities women engaged in were trading or sometimes local politics. The earliest roles women were found to play in building construction as in other spheres included offering peripheral support to males (Nwosu, 2012) like fetching water and haulage of building materials. With the advent of

western education, much of the school curriculum prepared females for professions like nursing, teaching, catering and secretarial studies (Fapohunda, 2011, Allanana, 2013) which were thought to be more suitable for women. Physically tasking activities were exclusively preserved for males. Nowadays in Nigeria, though it is becoming increasingly common to see women in roles formerly exclusively viewed as masculine (Nwosu, 2012; Ogege, 2011) like building contracting, professional consulting and construction supervisory roles, many still see these as men's work, which conflict with the roles that females are socialized into. With this background in gender role perception in Nigeria, many of the students especially the females gave the response that the feedback they received generally was that architecture was for men. This was partly because of the rigorous nature of the study and the more rigorous terrain of the professional practice. This was in agreement with studies, which found that architecture privileged male concerns and had patriarchal conventions (Ahrentzen & Groat, 1992; Niculae, 2012).

Among the responses given by both male and females, some felt that the nature of the course was masculine first evident in the culture of the architecture school which favoured patriarchal conventions (Ahrentzen & Groat, 1992) like bending over drawing boards for long hours, visiting construction sites and combined all these with having lectures all about construction of buildings and its components. This aspect was expressed as unappealing to many females in this department. Some had expressed shock or feeling upset when they encountered some courses. One female said about her first encounter of Building Structures that, *"I was very upset, I did not ever believe I was ever going to be doing such"*, another one said *"most females do not really have interest in some of the works or courses we are doing…because they seem masculine"*. The main masculine course that females had a "grudge" against was building components described by a female student as a study of *"what is inside the wall or under the ground"*. Visiting construction sites was also regarded by some females as *"stressful"*.

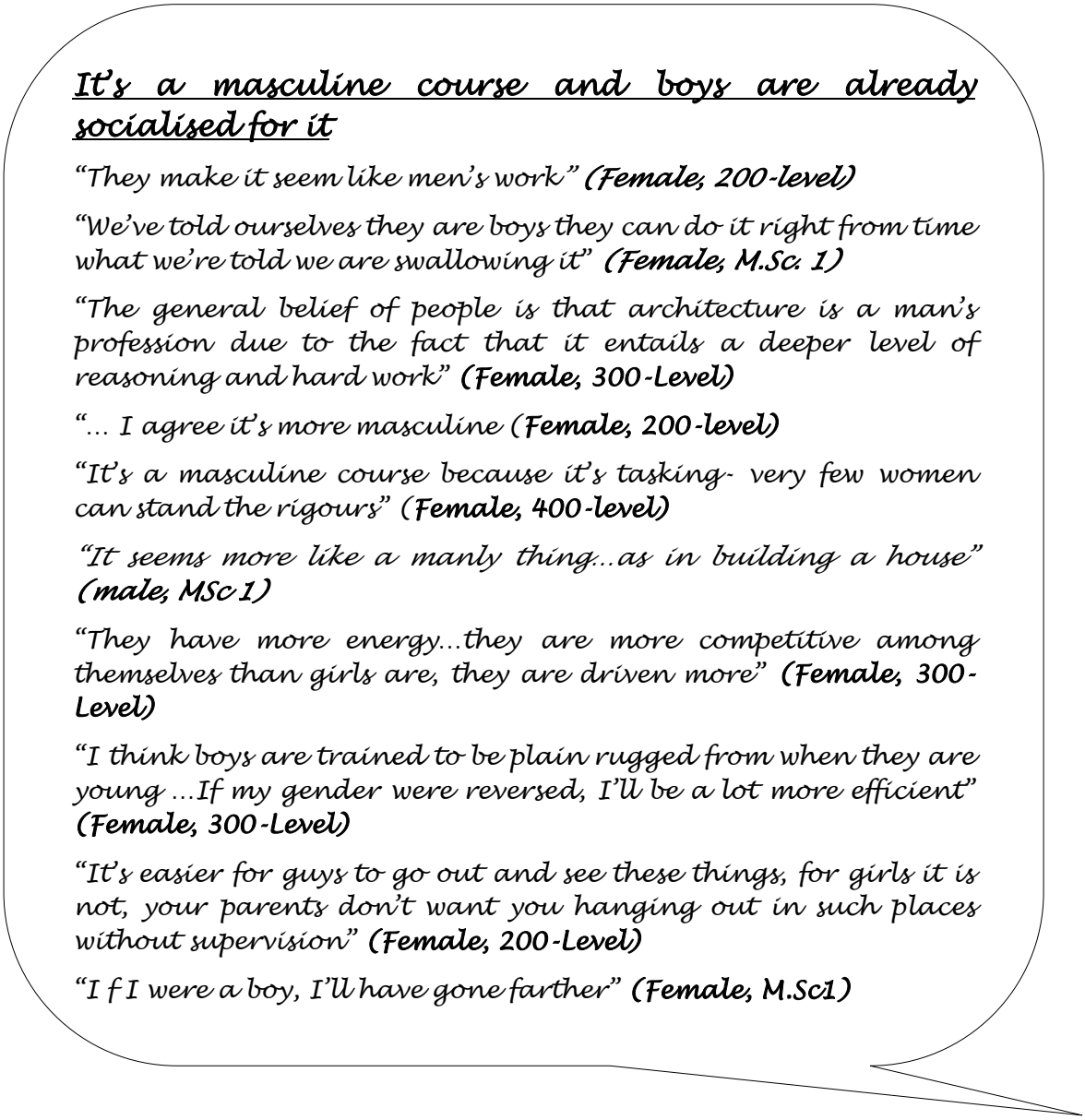

Figure 4.9: Theme - Architecture is masculine and more suitable for boys.
Source: Author's Fieldwork (2014-2016)

Secondly, architecture was considered to be masculine because, many of the traits that one needed to excel in the school seemed to be that, which male students were already socialized into (Figure 4.9). Traits like self-confidence, competitiveness, toughness, being adventurous and ruggedness were all macho tendencies, which were perceived as attributes one needed to be successful in the course.

Some of the females who had more interest in the course expressed the opinion that they would have excelled better in architecture if they were male rather than female. One expressed this view by saying:

> "Yes, I would have…I actually will because, number one, I don't have girls that motivate me…even when I want to do design, they are like…you like stress, you don't have to do something that is too crazy… but if I were to be a boy, I know I would be pushed more. Boys, you can't show them your work and they won't want to do something better than you. They are competing but among girls, no single form of competition… they are relaxed." (*Female, M.Sc1)*

This perceived relaxed or subdued nature of the females relative to the males was attributed to the curtailing nature of gender role perception and socialisation which Nwosu (2012) argued could "hamper the adventure instinct of females" (p.1242).

People always pass funny remarks when females venture into it

"I've had people remind me that I am a girl and what am doing is the same thing boys are doing and I cannot be expected to live up to their standard" **(Female, 300-Level)**

"Someone was impressed and said wow, you must really be strong" **(Female, 200-Level)**

"…Why don't you go into medicine or international relations, it's for boys…" **(Female, 200-Level)**

"My mum already warned me…the first thing anybody ever told me when I said I was studying architecture is that you're strong that that's work for men" **(Female, 400-Level)**

"When I told him I wanted to [study architecture] he was happy but has to tell me architecture is very difficult, very rigorous…and for a girl" (Female, 400-Level)

They are surprised that I could take that bold step it's a huge thing for them" **(Female, MSc1)**

Figure 4.10: Sub-theme - The idea of a female architect is still strange
Source: Author's Fieldwork (2014-2016)

The third reason why architecture is seen as a masculine course was because almost all of the female students had been told or perceived overtly or covertly that architecture was a man's course (Figures 4.10 and 4.11). First, the total number of female architects in practice that they knew was low compared to males.

One of the females said she felt that out of every 100 architects, 96 would be males. Others just made the observation that there were more males than females practicing architecture especially in Nigeria. This was corroborated specifically in Allanana (2013) where the proportion of females practicing architecture in Nigeria was put at 2.4%. Some other perceptions related to social stereotypes and expectations were raised. Another one narrated personal instances where she tried to express the fact that females who come to study architecture are already saddled with the burden of having to prove their worth and fight every negative stereotype. She said,

> I remember a design I did that was very creative, when I showed it to people, the first question that was asked was if I drew it for myself or I had one of my male friends do it. It is very annoying…or men on site begin to ask you funny questions like, why you are doing architecture as a girl or if you would be able to cope doing it.

One male student in 200-level said he often found the female students a distraction in the studio. He further explained that the female students were often asking him questions that distracted him from his purpose and work in the studio.

…and society expects less from females in architecture

"A female architect won't be taken seriously because it is seen as a man's world." **(Male, M.Sc.1)**

"As a female student, you are not expected to be as creative as a male student and are treated as such. This only makes us female students less confident in our work and approach to architecture in general. Most lecturers assume that female students do not intend to practice architecture as a profession and this is not always true. **(300-level, female)**

"An average person would rather want a female architect than a male architect" **(300-level male).**

Figure 4.11: Sub-theme - People expect less from females in architecture
Source: Author's Fieldwork (2014-2016)

(iii) Gender Matters because of natural abilities

Another theme that emerged was that the males and females in the school seemed to be gifted along different lines. Generally, the female students were perceived to be more studious or as some put it were more serious with their academics. However, in drawing courses like CADD, visual communication, architectural graphics and design studio, the males were perceived by both sexes to be more skillful than the females (Figure 4.12).

…girls are more laid back about their work

I think girls are more laid back about their work than boys…girls…don't really care" **(Female 300-level)**

…Boys are more creative and adventurous

"The boys they are very adventurous. For instance they browse for videos, software, like Lumion… now, they browse…and then they get inspired. You can't find a girl going online to look for the latest lumion expo…but boys when they see it, they are like they want to use it to do a great design" **(Female, MSc1)**

"Graphically…the boys are curious or more inquisitive about computers,…more than the girls who just watch movies. About sourcing for software, … I was using revitt but where I was working… they were using sketchup so I had to learn… back to school…we look for more software that makes things easier for us now there is Lumion…gives you more realistic presentation …the girls learn from us…we had to consult students in other schools … **(Male, MSc2)**

"I think boys, they do more about the aesthetics, they feel more concern about aesthetics, not like they don't take care of functional aspects, they put a little bit more consideration into the aesthetics of the building….[while I feel girls]… are more dedicated to the functionality of the building and less of the aesthetics. They are not so concerned about the aesthetics". **(Male. 300- Level)**

Figure 4.12: Sub-theme - Boys are more creative with design
Source: Author's Fieldwork (2014-2016)

Some felt that males were more creative when it came to designing. One female in 200-level said she felt boys were more creative hence their design and graphics were better and was supported by a male in 400-Level who said,

> On a broader scale, the males seem to be more creative in their disposition to the course and seem to stretch their minds more. They pay attention to details and presentation while girls pay attention to finishing and doing a bit more work. The girls are a bit more pragmatic in their disposition…willing to see their supervisors for guidance unlike the boys.

A female in 300-Level gave her opinion, and said, "In their designs, girls go for normal things; boys like to do extra work." (See plate 2.5) In Graphics too the males were judged by most students to have more skill than females. Their presentations were often observed to be bolder than that of the females and, in the masters class where CADD was the medium for presentation, always more sophisticated. The female attributed this to the more adventurous and outgoing nature of the males which can be seen in their responses. Some females said they often found the work of their male colleagues more creative and as such felt intimidated (Figure 4.13). One however said this often motivated her to try to improve her own work and she would go out of her way to ask the males how they achieved such. Another one however said she often felt discouraged when she sighted such works. She said,

> Especially when it comes to submitting our studio, you see guys with design then yours is just plain, what anybody will do…when it comes to putting curves, putting roofs, putting different kinds of features, they are very good at that but very few girls.

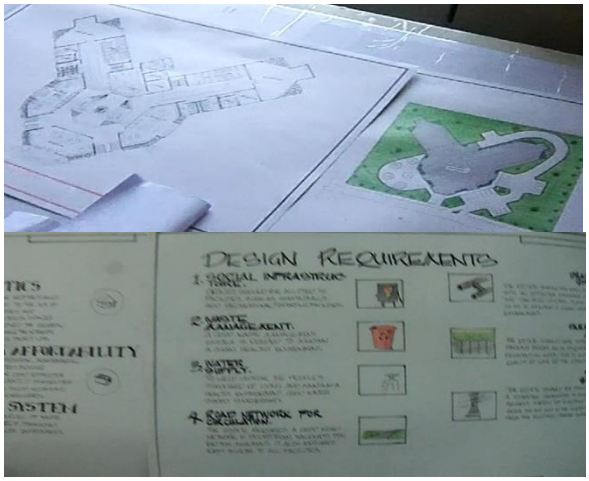

Plate 4.2: Design works of some high-performing female students
Source: Author's Fieldwork (2014-2016)

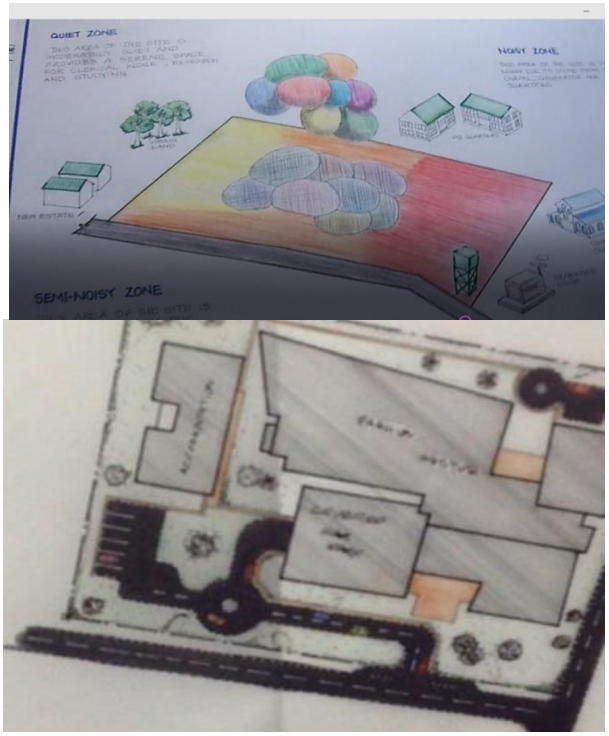

Plate 4.3: Design works of some high performing male students
Source: Author's Fieldwork (2014-2016)

…girls are more concerned with functionality

girls are more functional boys are more aesthetic, so a girl will do an architectural work thinking of how it's going to work and who it is impacting. Guys would do it mostly because they want to show off, so the guys works are usually more aesthetically pleasing.it may not be so functional" **(Female M.Sc. 2)**

"I think the males are deeper. For males it's more like about the aesthetics in architecture, they like beautiful buildings and things like that, but for females they go more into the nitty gritty like functionality, like the structural. Many females like to design from function making sure that everything is[ok] but for guys, they just generate one form that they like and fix functions into it [functional or not], yes" **(Male MSc2)**

Figure 4.13: Sub-theme - Girls are concerned with functionality.
Source: Author's Fieldwork (2014-2016)

Some females were of the opinion that females drew or designed differently from males with females being more connected with the proposed end users of the building. Some said they had to understand the target group before designing as they felt that was the essence of design. Having to understand the target group and undertaking the preliminaries through more analysis was often the target of females, while creativity and thinking out of the box was the focus of the boys who often came up with floor plans the very day the brief was given.

Some other students said they had observed that not only were the females less outgoing in terms of design and graphics, but they were more concerned about theoretical courses than males (Figure 4.14).

…girls put in more effort into theoretical courses

"Concerning studio and graphics, I'll say the boys put more effort into their drawing but concerning academics…they are average. It's like girls put in more effort into reading than boys. Boys are better because I've seen their drafting… girls are also good but I think, I don't know, I'm not sure but boys they acquaint themselves with these drawing habits and things like that" **(Female, 200-Level)**

"Female students are more theoretically inclined than practical but male students are not really bothered about the theory. They are more about the design…just a few of us[females] are after getting inspired by works, most just want to do the theory[functional] aspect and know that they won't get tackled for something, nobody wants to go all the way but the guys in my class are very creative, they don't even bother themselves about how it will work. They just bother themselves about the idea" **(Female M.Sc1)**

"Females they are very good and acquainted with the theoretical part of architecture, while the male students like to focus on their graphics, use of geometry, although we still have some females that are…but most are inclined to the theoretical part of architecture." **(Male, MSc 2)**

Figure 4.14: Sub-theme - Females are interested in the theoretical courses
Source: Author's Fieldwork (2014-2016)

The surpassing dexterity of the males in these courses were attributed to different reasons but the main one was that females in the school of architecture naturally had a

greater inclination than males to read books than to draw and were often not ready to make the necessary sacrifices to get their studio work done.

(v) Gender Matters -Girls have less Passion for architecture

Several students were of the opinion that with passion for architecture, any gender could succeed in architecture (Figure 4.15). While it was generally concurred that some female students seemed interested in architecture, many believed that the males were actually more deeply involved and more interested in architecture. A male in 200-Level said this lack of passion was evident in the fact that if one compared the contents of the systems (Computers) of male and female students, one would find lots of architectural stuff in those of the males, while in the systems of the females, things unrelated to architecture like movies would be predominant. Another male student in 300-level however held the view that this was sometimes a personal issue and not a general gender issue. He went as far as explaining that there were many male students who also did not have a deep passion for architecture.

Girls have less passion for architecture…their interests are different

"Everything depends on the person…,actually some girls in our class have a lot of architectural stuff while some guys don't have architectural stuff at all…they have games, videos, football matches but considering the fact that there are more guys than girls in the class, I think more guys would have architectural things on their laptops" **(Male, 300-Level)**

"I think females are interested in maybe the design but am not sure of the architecture, that is generally speaking, but there are some that am sure are into it but I think a lot are more into design than the architecture…a lot of females in our class now are into card making, fashion designing [artistic things] but for architecture mainstream" **(Male, 300-level)**

"Among the girls, I'll say Anna (real name withheld)…boys are more passionate… in their designs,…girls in interior design" **(Female, 300-level)**

Figure 4.15: Sub-theme - Girls have less passion for architecture.
Source: Author's Fieldwork (2014-2016)

The explanation given for this seeming lack of passion was that the interest of both sexes varied and that the things females valued in architecture differed from that of males. Another dimension to this discourse on passion and interest was that females had more things vying for their attention compared to the males, hence this choked out the great interest they would otherwise have had for architecture. The phrase "*Girls have more things to do*" or others implying the same kept recurring (Figure 4.16) indicating that there was inequality in the concerns of males and females.

Girls have many other things to do...

"Boys, they have less things to do, we girls have more things to do [like] their hair, clothes other minor things. Boys only worry about…that's their life mostly. They just wake up, come to class, and draw. We girls wake up, we have to clean up, we have to do other things before coming to class." **(Female, 300-level)**

*" girls when they want to make their hair, they have just dedicated the whole day to that alone, apart from that…they love this, they need this sense of closeness or togetherness…they tend to go out more with boys than boys will tend and I don't know, their mental…there are so many issues they are thinking about compared to boys…I don't know how I'll describe it…most of the girls I've seen they can't stay a day without watching a Korean movie as in they say it helps them, it teaches them something…I don't understand."(***Male, 200-Level)**

"Because they have more things to bother about than boys…all these things" **(Male, 300-level)**

"We have other things to do…hair, clothes maybe they want to buy this, buy that… their own haircut [boys] how much is it but our own we have to think of it for about a week, then we'll start thinking of how to divide the money, how you'll do this…boys cope more easily…[silence] I think we girls can sometimes get carried away by unnecessary things that don't have to do with our studies." **(Female, 200-level)**

Figure 4.16: Sub theme - Girls have many other things to do.
Source: Author's Fieldwork (2014-2016)

This explanation resounds with that given by Corroto (1996) where she recounted that "by learning…to ignore the literal place of the body", women were being denied the necessary "responsibility of everyday maintenance activities that includes all that

makes and sustains the body". This accordingly means that learning architecture entails unlearning how to be a woman if the daily cleaning activities were regarded as luxury.

(vi) Gender matters in the area of dynamics

Perceptions of classroom dynamics were from the students report and from observation by the researcher. The students perceived peculiarities in the dynamics of relations between genders. Some female students pointed out that having more females in the school was a support for them. Most of the females said having female lecturers and classmates helped to boost their morale that they were not alone in the masculine field. One major peculiarity was that of boundary heightening as described by Kanter, (1995). The female students in their classes tended to cluster together as reported by some students (Figure 4.17).

Girls cluster together…

"We girls cluster to one side…I don't know we don't mix together…we the girls are very few we just mix around ourselves…the boys too they just sit there they don't put in effort to come and sit around us" **(Female, 400-level)**

"It doesn't affect me 'cos boys sit at the other side, so they aren't disturbing me, Girls, we are always together and boys, I don't know why it's like that in my class I like it like that. No, I've never tried asking cos I like it like that. It should stay like that" **(Female, 200-level)**

"I don't know it was something we tried to fix in 100-Level…I think girls just come in and find themselves sitting together. I don't think it's that they are just separating themselves…I don't sit around girls. I usually sit in my own corner" **(Female, 300-level)**

"I don't know why, on several occasions… I just like tend to sit on the other side and it will now be like…what's happening? Why are you here? I don't know maybe they want to have a closer rapport within themselves" **(Male, 200-level)**

Figure 4.17: Sub-theme-Girls cluster together
Source: Author's Fieldwork (2014-2016)

This was corroborated by the observation (Plate 4.4) of the classroom sitting arrangement in all the undergraduate classes and studios where the female students always sat in a cluster closer to the front and towards the left of the class with a few exceptions breaking the ranks.

Plate 4.4: Female students clustered on one side of the studio
Source: Author's Fieldwork (2014-2016)

When questioned about this, none of the students interviewed could give an explanation. One female student in 300-Level said that they had tried to fix this in their class but had failed. Another male in 200-level who said he deliberately tried on a few occasions to sit among the females said he stopped when the females challenged him repeatedly why he was encroaching on their territory. Kanter (1995) and King *et al.* (2010) had described this territorial reaction as boundary heightening and described it as a phenomenon that occurred in a group or organisation with a skewed composition. Though the composition in CU with respect to gender was a tilted one, the boundary heightening between the minority and dominants was still visible. One female student said she was very comfortable with the sitting arrangement the way it was. Once out of formal classes and at studio time, the arrangement seemed to loosen up with some female students moving towards the back of the studio to draw. While females in the same level of study tended to flock together, once out of class, the reverse seemed to be the case. It was discovered both by observation and from the interviews that female students in the lower levels preferred seeking academic help, especially in design, from male students in higher levels. A female student in 200-

level said that her reason for meeting males was because they challenged her. In her words:

> like from 100-Level, I always had to meet 400-Level boys. 100-Level was really good and then 200-Level that's when design started... In 300-Level, the things I really had problems with were structural issues, when I had to do a plan that needed me to be concerned with structural elements. It's harder I had to consult a lot of people. Msc 1, Msc 2 left, right and center.

This consultation of male students in higher levels was also done by females in higher levels as reported by one of them who said she learnt from the male students in her class because she found them to be more competent. According to her,

> The reason why I think I've been able to overcome some design challenges is because I move a lot with guys. My friends, most of them are guys. So I always look at what they are doing…even when I got to M.Sc where I had challenges with my software, they helped me, whenever I was in studio I would go and sit with them and sometimes stayed overnight if I had to. I was just gravitating towards those that could help me rather than chit chatting with girls.

When questioned about why there were no female student mentors in design in higher levels, a female student replied that even though girls in the same level try to help one another, she often found those in the higher levels hostile. It was also observed that generally males either students or faculty were perceived by both male and female students to be generally more competent as architects. This paradigm would only be reversed if females are proven to be competent as evident from students who opted for female lecturers due to previous pleasant experience.

(vii) Gender does not matter in studying Architecture

There were some students both male and female who were of the perception that gender did not have any influence on studying architecture and rather expressed that even though architecture seemed like a masculine job, females who could supply the needed hard work, dedication and make the necessary sacrifices could equally succeed. Those of this persuasion cited the example of Zaha Hadid and Jumoke Adenowo who have made as much impact as men in the field of architecture. Some of their responses are shown in Figure 4.18

Gender does not matter

I think gender doesn't matter but your mind set- ***(Female, 200-level)***

Gender does not matter in architecture because architecture is not about whether you are a female or male. It is about how creative you can be. Zaha Hadid for example is a female and yet designs buildings like a man would be expected so gender does not matter. ***(Anonymous)***

"…are ready to go extra miles to achieve their success…Zaha Hadid…who had to do "out of the box" ideas and had to sacrifice things like family, children, friends and so on just to follow her chosen career, architecture-sacrifices other women are unwilling to make"- ***(Male 300-Level)***

Figure 4.18: Theme - Gender does not matter in studying architecture
Source: Author's Fieldwork (2014-2016)

4.3.5 Discussion of Findings

Among all courses offered in the departments, the courses loved best by the students varied significantly by gender in CU alone and on the overall. Among all females in the schools, Interior design (17.2%) and history of architecture (17.2%) were the courses loved best by highest proportion of females, while for males Architectural Design (20.4%) and CADD (17.3%) held the highest preference. These findings corroborated the findings of researchers like Clegg and Mayfield (1999) that the softer part of design seemed to hold more attraction for females. It was also found that both male and female students generally preferred male lecturers to female studio mentors (59.7%) except in BUT where the reverse was the case. The reasons given for these preferences were mainly based on previous experience, greater acceptability and stereo types. This suggests that if more female faculty could be engaged to teach all types of courses successfully, the perpetuation of the "mystery-mastery" and "masculine starchitect" as highlighted by Ahrentzen and Anthony (1993) would gradually be eroded.

The experiences of the students as described largely agreed with the findings of Lueth (2008) that the students' experiences were self-driven, interdependent and transitional

with the students getting more independent and discovering their own individual visions for their future with each successive level of study, which indicated positive development (Chickering & Reisser, 1993; Larrosa, 2000). For more females than males, depending on their socialisation and gender identities and ideologies to some extent, the personal learning patterns and abilities did not seem to make this transition process very smooth and rapid. More of the high-achieving males than females found the experience easier. The low - achieving females did not find the experience easy but were able to still endure more than the low-achieving males and perform better. In 200-Level, for all students irrespective of gender or level of achievements, the experience was described as challenging, difficult, frustrating, stressful, confusing, difficult and too demanding. The only differences were the approaches or students attitude to their work. The high-achievers were more active and persisted even in the face of stress and discouragement. Approval of output and positive feedback made them more confident and motivated. Noteworthy however was the fact that the high-achieving females appeared to enjoy social support from home and were from family and social backgrounds where gender was not seen or used as a limiting factor. For the two low-achieving females, both had perceptions of gender being a limiting factor for them.

In 300-Level the experiences of the students varied more individually than by gender. For the high-achieving males, it was generally easier than for the females with the exception of Carol who had been exposed to architecture prior to coming to study it. Chioma whose creativity lay with handcrafts did not find it so easy even though she was judged to be more hard working. The low-achieving females however performed better than the males despite the difficulty they said they experienced. Again in 400-Level, for the high and low-achievers, the input of the females was judged to be higher than that of the males. The high-achieving females here also had social support (Taylor, 2011) from their backgrounds with an architect father and architect mother, respectively. From their interviews also, it was surmised that their gender ideology did not favour patriarchalism, and hence the ability to achieve higher. Also the low-achieving females outperformed the low- achieving males. In MSc 1, both the high-achieving males and females excelled by diligence. The difference however was that for the females, it was more by social support (Taylor, 2011), self-efficacy (Aluede et

al, 2002) and natural disposition. It was easier because there was less instruction and they were responsible for their own learning, while females said it was easier because the medium for presenting design had changed to CADD. The males however found CADD challenging because they were taking it to another level of using rendering software while females stuck to basic CADD. Two low-achieving students, one male (Oba) and one female (Julie) managed their learning by self-regulatory means (Powers, 2006) and succeeded to move upward at the end of the year, while the other low-achieving male deferred the session in order to solve personal challenges. Joy, the low-achieving female dropped out of the study altogether as she had been forced to study architecture and could not manage the challenges any more. The different reactions here were however due to personal rather than gender differences.

M.Sc 2 students generally said the experience was hectic because of their thesis. The females both high and low performing nearly suffered a burnout and were obviously exhausted at the end. The high performing males here both were able to manage their learning more effectively with less stress. The low-achieving students in focus, irrespective of their gender had to return the following session to complete their studies. The males were heavily distracted by social and economic activities while the females had different reasons. One of them, despite her hard work and obvious struggles, had failed a written course while the other could not complete her design for lack of the needed drive she had complained about in the interview. Even though all the MSc 2 students had honed a way of working and had a clear idea of what they were going to do after school as found by Lueth (2008), the females were more likely to deviate from architecture mainstream to other peripheral design endeavours in the short and long run, while the males all spoke of continuing with architecture irrespective of their achievement status. From these experiences, the major gender differences and inequalities observed are highlighted here. The first is that the males were advantaged because they did not have to fight the threat of being in the minority status, which all the females raised irrespective of academic achievement. Second, they were never confronted with the gendered dilemma of putting aside their feminine realities. Third they didn't need to invest any energy into fighting these stereotypes. Hence females always worked against the grain. Some females however were more privileged because they enjoyed social support from their home backgrounds (Taylor,

2011); however the volume and quality of social support varied among them and could be seen in the quality of their performance. As explained by Nurullah (2012) there needs to be a proper match between the type of social support received and stressor in order to have the desired outcome. The males who were talented found it easiest to succeed than any other set of students, while the males who were distracted and not diligent were the worst performers. For females who were not talented, some form of hard work and diligence seemed to go a long way in helping their success. It could thus be concluded that the experience of the females and males differed mainly in the greater energy put into achieving success. By going out of the way, it means that they had to step out of societal gender defined roles in order to succeed. This finding agreed in every way with that by Corroto (1996) who submitted that architecture was a masculine dominated field and success for a female in that field meant to deviate from accepted feminine norms and realities.

The perceptions given by the students from their school experience about gender and studying architecture had several patriarchal connotations with both male and female students indicating a belief in male advantage and female disadvantage in several areas including psychological make-up with males judged more able to handle physical and emotional stress. Many females agreed that the fact that people already thought that architecture was for males was a strong discouraging factor for women. Most believed that boys were better in design articulation and graphical expression and females in theoretical and written courses and some believed that females succeeding in design courses were due to favouritism on the part of the lecturers. Some males and females however were of the opinion that gender does not matter if you have passion for the course. Overall, both males and females were of the consensus that for girls to be recognized in the field of architecture, they have to work harder than their male counterparts. These perceptions largely agree with those reported by earlier studies of gender in architectural education in other countries like the USA (Ahrentzen & Anthony, 1993; Ahrentzen & Groat, 1992) and in the UK (Fowler & Wilson, 2004)

This section reported and discussed the findings on gender and how it related to student experiences in the school. It investigated aspects of experience such as the course preferences, students' attitudes and issues pertinent to different courses types

finding that gender had an impact on these. Also included were the students' perceptions about how gender impacted on the study of architecture based on what they had experienced in the school. The general submission was that student experience and achievement in the school of architecture was to a certain extent influenced by learning schema, gender schema and societal gender roles with more strong-willed learners, masculine and androgynous students irrespective of gender excelling more than the feminine and dynamic learners. Student achievement however seemed to be more largely influenced by personal determination and commitment to engage actively with one's learning irrespective of one's natural disposition as some feminine and dynamic learners also recorded high academic achievements. The students experiences differed according to the level of study and within each level, gender inequalities and differences were encountered. Overall, female students were generally perceived to have a more challenging academic experience and to strive more for success than the male students.

4.4. Gender, Students' Aspirations and Performance

This section contains the findings on the investigation of the relationship between gender and the learning outcomes of the students as defined by the fourth objective of this study. The data measuring all the variables are presented in gender disaggregated format and gender identities where practicable. The results from analysing the various data are presented and discussed. The section comprises three parts. The first part contains the outcomes that have to do with the feelings and attitudes, of the students. The second has to do with aspirations and plans of the students, while the third part has to do with the tangible aspects of the outcomes which is the academic results of the students. The discussions were all done with respect to gender differences and inequalities.

4.4.1 Gender and Level of Satisfaction with Studying Architecture

This section presents the result on how the students feel as an aftermath of being in the school of architecture over time. This is important because understanding the feelings and morale of the students is a major part of student learning outcomes. It informs us of how the experiences in the school have shaped the students' psyche, confidence and zeal for architecture because these are among the expressive traits for which different levels have been reported for the two sexes (Marini, 1990, Cooke-

Simpson & Voyer, 2007). The data and findings were obtained from the survey and presented in tables and charts.

Table 4.24 shows a summary of the responses of the students when asked the extent of their satisfaction with architecture as a course of study or feeling they had chosen the wrong profession. Looking at the table, no apparent difference was found in the responses given by male and female students. From all three departments, most of the students expressed satisfaction with architecture as a course of study. There was no statistically significant relationship between gender or gender identity and the extent of the students' satisfaction with architecture as a course of study. Statistical tests also confirmed that there was no significant relationship between this satisfaction and their gender in any of the three schools (CU, p=.660; CRU, p=1.000; BUT, p=.179) or overall (χ^2=.011, df =1, p=.918). There was also no significant relationship between this and their gender identity in any school (CU, p =.417; CRU, p =.591; BUT, p =.816) and overall (χ^2=.147, df =2, p =.929). This meant that satisfaction with architecture as a course of study had nothing to do with the gender or gender Identity of the students in any of the three schools.

The students were also asked if and how often they felt they had chosen the wrong profession. The result of their responses is shown in Table 4.24. In two of the schools, the females had a higher frequency of this feeling than the males. In CU (52.1%) and CRU (37.5%) of the females said they always or often had this feeling. Fishers exact test outcome indicated a statistically insignificant relationship between the students' gender and the frequency of the feeling that architecture was the wrong profession for them with more females reporting the experience. The investigation described above was repeated for gender identities and the frequency of the feeling of choosing the wrong profession was found to be highest among the feminine gender identity in CU (68.9%) and lowest among the feminine in BUT (14.3%). This was found to be significantly related to the students' gender identity (p =.002) in CU alone out of the three schools (See Table 4.25) and when all the three schools were combined (χ^2=9.694, df =2, p =.008*).* When asked how well they were able to use architecture as a means of expression of creativity, irrespective of their gender (Table 4.24) or gender identity (Table 4.25), most of the students in all three schools indicated that they were "not so able" to use architecture to express creativity. Statistical tests also

confirmed that there was no significant relationship between this ability and their gender in any of the three schools (CU, p =.054; CRU, p =.208; BUT, p =1.000) or overall (χ^2=1.964, df =1, p=.161) as shown in Table 4.24. There was also no significant relationship between this and their gender identity in any school (CU, p=.424; CRU, p=.166; BUT, p=.726) and overall (χ^2=.147, df =2, p =.250) (Table 4.25).This implied that gender or gender identity was not always a good determining factor for evaluating the students' satisfaction or dissatisfaction with architecture as a course of study or profession.

Table 4.24: Gender and Satisfaction with Studying Architecture

Variables by University		Categories	Student Gender Male N (%)	Female N (%)	Total N (%)	*Fishers Exact Test. (2-sided)*
Satisfied With Studying Architecture *χ^2=.011, df=1, p=.918*	CU	Satisfied	108 (62.4)	40 (58.8)	148 (61.4)	*.660*
		dissatisfied	65 (37.6)	28 (41.2)	93 (38.6)	
	CRU	Satisfied	34 (85.0)	7 (87.5)	41 (85.4)	*1.000*
		dissatisfied	6 (15.0)	1 (12.5)	7 (14.6)	
	BUT	Satisfied	23 (65.7)	13 (86.7)	36 (72.0)	*.179*
		dissatisfied	12 (34.3)	2 (13.3)	14 (28.0)	
	Total	Satisfied	165 (66.5)	60 (65.9)	225 (66.4)	*1.000*
		dissatisfied	83 (33.5)	31 (34.1)	114 (33.6)	
I Feel I Chose a Wrong Profession *χ^2=1.674, df=1,p=.196*	CU	always/often	74 (42.8)	37 (52.1)	111 (45.5)	*.204*
		rarely/never	99 (57.2)	34 (47.9)	133 (54.5)	
	CRU	always/often	12 (30.0)	3 (37.5)	15 (31.3)	*.692*
		rarely/never	28 (70.0)	5 (62.5)	33 (68.8)	
	BUT	always/often	8 (23.5)	3 (20.0)	11 (22.4)	*1.000*
		rarely/never	26 (76.5)	12 (80.0)	38 (77.6)	
	Total	always/often	94 (38.1)	43 (45.7)	137 (40.2)	*.217*
		rarely/never	153 (61.9)	51 (54.3)	204 (59.8)	
Can Use Arch. to Express Creativity *χ^2=1.964, df=1,p=.161*	CU	very able	27 (15.5)	4 (5.7)	31 (12.7)	*.054*
		Not so able	147 (84.5)	66 (94.3)	213 (87.3)	
	CRU	very able	10 (25.0)	4 (50.0)	14 (29.2)	*.208*
		Not so able	30 (75.0)	4 (50.0)	34 (70.8)	
	BUT	very able	5 (14.3)	2 (13.3)	7 (14.0)	*1.000*
		Not so able	30 (85.7)	13 (86.7)	43 (86.0)	
	Total	very able	42 (16.9)	10 (10.8)	52 (15.2)	*.179*
		Not so able	207 (83.1)	83 (89.2)	290 (84.8)	

Source: Author's Fieldwork (2014-2016)

Table 4.25: Gender Identity and Satisfaction with Studying Architecture

Variables by University		Categories	Student Gender Identity: Feminine N (%)	Androgynous N (%)	Masculine N (%)	Total N (%)	*Fishers Exact Test. (2-sided)*
Satisfied With Studying Architecture χ^2*=.147, df=2, p=.929*	CU	Satisfied	25 (55.6)	56 (58.9)	64 (66.0)	145 (61.2)	*.417*
		dissatisfied	20 (44.4)	39 (41.1)	33 (34.0)	92 (38.8)	
	CRU	Satisfied	9 (100.0)	22 (84.6)	8 (80.0)	39 (86.7)	*.591*
		dissatisfied	0 (.0)	4 (15.4)	2 (20.0)	6 (13.3)	
	BUT	Satisfied	6 (85.7)	16 (72.7)	12 (70.6)	34 (73.9)	*.816*
		dissatisfied	1 (14.3)	6 (27.3)	5 (29.4)	12 (26.1)	
	Total	Satisfied	40 (65.6)	94 (65.7)	84 (67.7)	218 (66.5)	*.940*
		dissatisfied	21 (34.4)	49 (34.3)	40 (32.3)	110 (33.5)	
I Feel I Chose a Wrong Profession χ^2*=9.694, df=2, p=.008*	CU	always/often	31 (68.9)	40 (41.2)	38 (38.8)	109 (45.4)	*.002*
		rarely/never	14 (31.1)	57 (58.8)	60 (61.2)	131 (54.6)	
	CRU	always/often	3 (33.3)	11 (42.3)	1 (10.0)	15 (33.3)	*.178*
		rarely/never	6 (66.7)	15 (57.7)	9 (90.0)	30 (66.7)	
	BUT	always/often	1 (14.3)	5 (22.7)	3 (18.8)	9 (20.0)	*1.000*
		rarely/never	6 (85.7)	17 (77.3)	13 (81.3)	36 (80.0)	
	Total	always/often	35 (57.4)	56 (38.6)	42 (33.9)	133 (40.3)	*.008*
		rarely/never	26 (42.6)	89 (61.4)	82 (66.1)	197 (59.7)	
Can Use Arch. to Express Creativity χ^2 *=2.903, df =2, p=.234*	CU	very able	4 (8.7)	11 (11.3)	16 (16.5)	31 (12.9)	*.424*
		Not so able	42 (91.3)	86 (88.7)	81 (83.5)	209 (87.1)	
	CRU	very able	3 (33.3)	5 (19.2)	5 (50.0)	13 (28.9)	*.166*
		Not so able	6 (66.7)	21 (80.8)	5 (50.0)	32 (71.1)	
	BUT	very able	0 (.0)	3 (13.6)	3 (17.6)	6 (13.0)	*.726*
		Not so able	7 (100.0)	19 (86.4)	14 (82.4)	40 (87.0)	
	Total	very able	7 (11.3)	19 (13.1)	24 (19.4)	50 (15.1)	*.250*
		Not so able	55 (88.7)	126 (86.9)	100 (80.6)	281 (84.9)	

Source: Author's Fieldwork (2014-2016)

4.4.2 Gender and Future Aspirations and Role Models

The future aspirations of the students were examined for gender differences by asking the students first about their plans to complete their architectural studies. From Table 4.26, the findings from investigating the relationship between the plans of the students on how to complete their architectural education and their gender can be seen. There was not much variation in the distribution of responses given by males and females. Most of the students in CU (67.5%) and BUT (76.0%) irrespective of their gender signified the intention of completing both their Bachelor's and Master's degree in their present institutions unlike the students in CRU who mostly (40.4%) planned to go elsewhere for further studies . Gender (Table 4.27) did not have any significant relationship with these plans in all three schools (CU, p=.109); CRU, p=.419; BUT, p=.171) or when considered collectively (χ^2= 2.611, df =2, p=.271). When the three schools were combined however, gender identity was found to have a statistically significant relationship with the students' plans with a very low proportion of masculine (4.8%) than other gender identities planning to quit architecture after BSc.

When asked what academic division the students aspired to graduate with, 51.9% of all students in CU, 31.3% of those in CRU and 58% of those in BUT responded that they wanted to graduate in the first class division. In each of all three schools, a larger proportion of females than males had this aspiration. It was discovered that 63.4% of the female students in CU, 75.0% of those in CRU and 86.7% of those in BUT had this aspiration (Table 4.26). Statistical tests indicated that there was a significant relationship between this and the students' gender in all three schools. (CU, p=.010; CRU, p=.010; BUT, p=.171) and overall (χ^2=19.588, df =2, p=.000). For gender identities (see Table 4.27), it was only in CRU (p=.002) among the 3 schools and overall (χ^2=12.501, df=4, p=.014) that there was a statistically significant relationship with students' aspiration with a greater proportion of the feminine (66.7%) and masculine (60%) aspiring to finish in the first class division while the androgynous mostly (65.4%) indicated an aspiration for second class upper division. There was no such statistically significant relationship in CU (p=.200) and BUT (p=.629).

Table 4.26: Gender and Academic Aspirations.

Academic Aspiration by University		Categories	Student Gender Male N (%)	Female N (%)	Total N (%)	*Fishers Exact Test. (2-sided)*
Plans to complete study χ^2=2.611, df=2, p=.271	**CU**	Both BSc & MSc here	121 (70.3)	43 (60.6)	164 (67.5)	*.109*
		MSc elsewhere in arc/related field	39 (22.7)	17 (23.9)	56 (23.0)	
		Quitting arc after BSc	12 (7.0)	11 (15.5)	23 (9.5)	
	CRU	Both BSc & MSc here	15 (38.5)	3 (37.5)	18 (38.3)	*.419*
		MSc elsewhere in arc/related field	17 (43.6)	2 (25.0)	19 (40.4)	
		Quitting arc after BSc	7 (17.9)	3 (37.5)	10 (21.3)	
	BUT	Both BSc & MSc here	27 (79.4)	11 (68.8)	38 (76.0)	*.171*
		MSc elsewhere in arc/related field	4 (11.8)	5 (31.3)	9 (18.0)	
		Quitting arc after BSc	3 (8.8)	0 (.0)	3 (6.0)	
	Total	Both BSc & MSc here	163 (66.5)	57 (60.0)	220 (64.7)	*.260*
		MSc elsewhere in arc/related field	60 (24.5)	24 (25.3)	84 (24.7)	
		Quitting arc after BSc	22 (9.0)	14 (14.7)	36 (10.6)	
Academic Division aspired to graduate with χ^2=19.588, df=2, p=.000	**CU**	First Class	81 (47.1)	45 (63.4)	126 (51.9)	*.010*
		Second Class Upper	73 (42.4)	25 (35.2)	98 (40.3)	
		Second Class Lower/Undecided	18 (10.5)	1 (1.4)	19 (7.8)	
	CRU	First Class	9 (22.5)	6 (75.0)	15 (31.3)	*.010*
		Second Class Upper	23 (57.5)	1 (12.5)	24 (50.0)	
		Second Class Lower/Undecided	8 (20.0)	1 (12.5)	9 (18.8)	
	BUT	First Class	16 (45.7)	13 (86.7)	29 (58.0)	*.026*
		Second Class Upper	16 (45.7)	2 (13.3)	18 (36.0)	
		Second Class Lower/Undecided	3 (8.6)	0 (.0)	3 (6.0)	
	Total	First Class	106 (42.9)	64 (68.1)	170 (49.9)	*.000*
		Second Class Upper	112 (45.3)	28 (29.8)	140 (41.1)	
		Second Class Lower/ Undecided	29 (11.7)	2 (2.1)	31 (9.1)	

Source: Author's Fieldwork (2014-2016)

Table 4.27: Gender Identity and Academic Aspirations

Academic Aspiration by University		Categories	Student Gender Identity: Fem. N	Fem. (%)	Andro. N	Andro. (%)	Masc. N	Masc. (%)	Total N	Total (%)	*Fishers Exact Test. (2-sided)*
Plans to complete study χ^2=11.899, *df*=4, *p*=.018	**CU**	Both BSc & MSc here	30	(65.2)	64	(67.4)	67	(68.4)	161	(67.4)	
		MSc elsewhere arc/related field	7	(15.2)	23	(24.2)	25	(25.5)	55	(23.0)	*.137*
		Quitting arc after BSc	9	(19.6)	8	(8.4)	6	(6.1)	23	(9.6)	
	CRU	Both BSc & MSc here	4	(44.4)	7	(26.9)	6	(60.0)	17	(37.8)	
		MSc elsewhere arc/related field	2	(22.2)	12	(46.2)	4	(40.0)	18	(40.0)	*.161*
		Quitting arc after BSc	3	(33.3)	7	(26.9)	0	(.0)	10	(22.2)	
	BUT	Both BSc & MSc here	5	(83.3)	15	(68.2)	13	(76.5)	33	(73.3)	
		MSc elsewhere arc/related field	1	(16.7)	4	(18.2)	4	(23.5)	9	(20.0)	*.680*
		Quitting arc after BSc	0	(.0)	3	(13.6)	0	(.0)	3	(6.7)	
	Total	Both BSc & MSc here	39	(63.9)	86	(60.1)	86	(68.8)	211	(64.1)	
		MSc elsewhere arc/related field	10	(16.4)	39	(27.3)	33	(26.4)	82	(24.9)	*.015*
		Quitting arc after BSc	12	(19.7)	18	(12.6)	6	(4.8)	36	(10.9)	
Academic Division aspired to graduate with χ^2=12.501, *df*=4, *p*=.014	**CU**	1st Class	23	(51.1)	51	(53.1)	52	(53.1)	126	(52.7)	
		2nd Class Upper	20	(44.4)	33	(34.4)	42	(42.9)	95	(39.7)	*.200*
		2nd Class Lower/ Undecided	2	(4.4)	12	(12.5)	4	(4.1)	18	(7.5)	
	CRU	First Class	6	(66.7)	2	(7.7)	6	(60.0)	14	(31.1)	
		Second Class Upper	2	(22.2)	17	(65.4)	3	(30.0)	22	(48.9)	*.002*
		2nd Class Lower/ Undecided	1	(11.1)	7	(26.9)	1	(10.0)	9	(20.0)	
	BUT	First Class	5	(71.4)	12	(54.5)	11	(64.7)	28	(60.9)	
		Second Class Upper	2	(28.6)	7	(31.8)	6	(35.3)	15	(32.6)	*.629*
		Second Class Lower/ Undecided	0	(.0)	3	(13.6)	0	(.0)	3	(6.5)	
	Total	First Class	34	(55.7)	65	(45.1)	69	(55.2)	168	(50.9)	
		Second Class Upper	24	(39.3)	57	(39.6)	51	(40.8)	132	(40.0)	*.017*
		Second Class Lower/ Undecided	3	(4.9)	22	(15.3)	5	(4.0)	30	(9.1)	

Source: Author's Fieldwork (2014-2016)

In order to find out the mentorship visibility of both male and female architects the students had in the architectural profession, the students were asked about male and female masters in architecture. They were asked to mention three (3) female and male architects whose works inspired them both on the Nigerian scene and internationally. A summary of their responses is shown in Tables 4.28. The first observation was that overall and in all the three (3) schools a greater proportion of the students mentioned two or three male architects both on the Nigerian (CU=63.5%; CRU=84.6%; BUT=84.6%; all=70.1%), and international scene (CU=72.9%; CRU=82.1%; BUT=81.3%; all=75.1%). In marked contrast to this, 55.6% of all the students and 65.1% of CU students could mention only one Nigerian female architect whose work inspired them. Similarly, 89.9% of all students and the greater proportion of respondents in each of the three schools (CU=95.7%; CRU=80.0%; BUT=70.0%), irrespective of their gender, were able to mention only one female architect on the international scene whose work was a source of inspiration to them. Secondly, it was observed that the male students were more conversant with architects generally than

the females. This was because for three out of the four categories of architects mentioned, the proportion of male students who mentioned two to three architects was higher than that of the females. Chi-square test revealed that when all schools were considered there were statistically significant relationship between the students' gender and the male and female mentors available for Nigerian male architects, (χ^2 =4.603, *df*=1, *p*=.032), international male architects (χ^2 =5.159, *df*=1,*p*=.023) and Nigerian female architects (χ^2 =7.240, *df*=1, *p*=.007) but not with international female architects (χ^2 =.160, *df*=1, *p*=.689). When these were broken down into schools, however no significant relationship with gender was observed except among CU students (*p*=.009) with respect to international male architects admired (Table 4.28).

Table 4.28: Gender of Role Models

Mentors mentioned* University		Categories	Student Gender Male N (%)	Female N (%)	Total N (%)	*Fishers Exact Test. (2-sided)*
Mention Nigerian male architects admired	CU	mentioned 1	29 (33.0)	13 (48.1)	42 (36.5)	*.174*
		mentioned 2/3	59 (67.0)	14 (51.9)	73 (63.5)	
	CRU	mentioned 1	5 (14.7)	1 (20.0)	6 (15.4)	*1.000*
		mentioned 2/3	29 (85.3)	4 (80.0)	33 (84.6)	
	BUT	mentioned 1	0 (.0)	2 (50.0)	2 (15.4)	*.070*
		mentioned 2/3	9 (100.0)	2 (50.0)	11 (84.6)	
	Total	mentioned 1	34 (26.0)	16 (44.4)	50 (29.9)	*.040*
		mentioned 2/3	97 (74.0)	20 (55.6)	117 (70.1)	
Mention Nigerian female architects admired	CU	mentioned 1	21 (56.8)	20 (76.9)	41 (65.1)	*.115*
		mentioned 2/3	16 (43.2)	6 (23.1)	22 (34.9)	
	CRU	mentioned 1	6 (30.0)	3 (75.0)	9 (37.5)	*.130*
		mentioned 2/3	14 (70.0)	1 (25.0)	15 (62.5)	
	BUT	mentioned 1	4 (40.0)	1 (50.0)	5 (41.7)	*1.000*
		mentioned 2/3	6 (60.0)	1 (50.0)	7 (58.3)	
	Total	mentioned 1	31 (46.3)	24 (75.0)	55 (55.6)	*.009*
		mentioned 2/3	36 (53.7)	8 (25.0)	44 (44.4)	
Mention International male architects admired	CU	mentioned 1	26 (21.3)	19 (43.2)	45 (27.1)	*.009*
		mentioned 2/3	96 (78.7)	25 (56.8)	121 (72.9)	
	CRU	mentioned 1	6 (18.8)	1 (14.3)	7 (17.9)	*1.000*
		mentioned 2/3	26 (81.3)	6 (85.7)	32 (82.1)	
	BUT	mentioned 1	3 (25.0)	0 (.0)	3 (18.8)	*.529*
		mentioned 2/3	9 (75.0)	4 (100.0)	13 (81.3)	
	Total	mentioned 1	35 (21.1)	20 (36.4)	55 (24.9)	*.030*
		mentioned 2/3	131 (78.9)	35 (63.6)	166 (75.1)	
Mention International female architects admired	CU	mentioned 1	95 (96.9)	37 (92.5)	132 (95.7)	*.356*
		mentioned 2/3	3 (3.1)	3 (7.5)	6 (4.3)	
	CRU	mentioned 1	26 (78.8)	6 (85.7)	32 (80.0)	*1.000*
		mentioned 2/3	7 (21.2)	1 (14.3)	8 (20.0)	
	BUT	mentioned 1	11 (73.3)	3 (60.0)	14 (70.0)	*.613*
		mentioned 2/3	4 (26.7)	2 (40.0)	6 (30.0)	
	Total	mentioned 1	132 (90.4)	46 (88.5)	178 (89.9)	*.789*
		mentioned 2/3	14 (9.6)	6 (11.5)	20 (10.1)	

Source: Author's Fieldwork (2014-2016)

Findings on the students' intentions about practicing architecture in the future are shown in Table 4.29. From the table, it is evident that most of the students, irrespective of their gender signified the intention of practising architecture in the future. Overall, a total of 74.1% of the students made up of 75.8% of the males and 69.8% of females had this intention. Similarly, in each school, a greater proportion of the males than females signified this intention as shown in Table 4.29. Fisher's exact test however showed that this differences had no significant relationship with students' gender in any of the three schools (CU: p= .535); CRU: p=.633; BUT: p=.451 or when considered overall (χ^2=1.306, df=1,p=.253).

Further investigation into specific areas of practice intended was carried out and the findings are also displayed in Table 4.29 which contains a gender disaggregation of desired areas of architectural practice of the students. Across all the three schools, Architectural consultancy (29.3%), building construction (22.7%) and interior design (19.0%) were the overall most subscribed for when ranked by the frequency of being mentioned. Individual schools had similar choices with slight variations as shown in Table 4.29. The situation was however different in each university especially when viewed from gender specific choices. Overall, the females subscribed mostly for interior design (44.3%) and architectural consultancy (22.7%), while the males mostly opted for architectural consultancy (31.8%) and Building construction (27.5%). For two out of the three departments, the greatest preference of the males was for building construction with 47.4% of the males in CRU and 33.3% of those in BUT in this category. For CU, however the greater part of the males (36.4%) indicated architectural consultancy as their most preferred area of future practice. For the females on the other hand, the most preferred area was interior design in each of the three schools (CU=39.4%; CRU=37.5% and BUT=71.4%) overall (44.3%). The areas that held the least interest for different genders varied from school to school (Table 4.29) but overall, interior design (9.4%) and project management (6.8%) held the least interest for males and females, respectively. These differences were considered statistically significant by fisher's exact test in each school (CU: p=.000; CRU: p=.041; BUT: p=.000) and overall (χ^2=53.910, df= 4, p=.000).

Table 4.29: Gender and Career Aspirations.

Career Aspiration* University		Categories	Student Gender Male N (%)	Female N (%)	Total N (%)	*Fishers Exact Test. (2-sided)*
Aspire to practise architecture in future?	CU	Yes	125 (72.3)	48 (67.6)	173 (70.9)	*.535*
		No/Undecided	48 (27.7)	23 (32.4)	71 (29.1)	
	CRU	Yes	33 (82.5)	6 (75.0)	39 (81.3)	*.633*
		No/Undecided	7 (17.5)	2 (25.0)	9 (18.8)	
	BUT	Yes	30 (85.7)	13 (76.5)	43 (82.7)	*.451*
		No/Undecided	5 (14.3)	4 (23.5)	9 (17.3)	
	Total	Yes	188 (75.8)	67 (69.8)	255 (74.1)	*.273*
		No/Undecided	60 (24.2)	29 (30.2)	89 (25.9)	
Most Preferred Area of Practice	CU	Architectural Consultancy	59 (36.4)	18 (27.3)	77 (33.8)	*.000*
		Building Construction	35 (21.6)	8 (12.1)	43 (18.9)	
		Real Estate/Others	32 (19.8)	10 (15.2)	42 (18.4)	
		Project Management	19 (11.7)	4 (6.1)	23 (10.1)	
		Interior Design	17 (10.5)	26 (39.4)	43 (18.9)	
	CRU	Architectural Consultancy	8 (21.1)	1 (12.5)	9 (19.6)	*041*
		Building Construction	18 (47.4)	1 (12.5)	19 (41.3)	
		Real Estate/Others	2 (5.3)	1 (12.5)	3 (6.5)	
		Project Management	8 (21.1)	2 (25.0)	10 (21.7)	
		Interior Design	2 (5.3)	3 (37.5)	5 (10.9)	
	BUT	Architectural Consultancy	7 (21.2)	1 (7.1)	8 (17.0)	*.000*
		Building Construction	11 (33.3)	0 (.0)	11 (23.4)	
		Real Estate/Others	6 (18.2)	3 (21.4)	9 (19.1)	
		Project Management	6 (18.2)	0 (.0)	6 (12.8)	
		Interior Design	3 (9.1)	10 (71.4)	13 (27.7)	
	Total	Architectural Consultancy	74 (31.8)	20 (22.7)	94 (29.3)	*.000*
		Building Construction	64 (27.5)	9 (10.2)	73 (22.7)	
		Real Estate/Others	40 (17.2)	14 (15.9)	54 (16.8)	
		Project Management	33 (14.2)	6 (6.8)	39 (12.1)	
		Interior Design	22 (9.4)	39 (44.3)	61 (19.0)	

Source: Author's Fieldwork (2014-2016)

Gender identity was also introduced as a factor in relation to career aspiration (Table 4.30). It was found to have no significant relationship with the intention to practice architecture in future combining all three schools (p=.100) and in each school except in CU (p=.001) where the feminine (45.7%) had the greatest proportion of those whose response was "no or undecided".

For the area of practice aspired to, on the overall, the feminine mostly had their sights on interior design (39.7%) and architectural consultancy (20.7%), while the androgynous (33.1% & 21.6%) and masculine (29.3% & 25%) had theirs on architectural consultancy and building construction, respectively. The preferences varied from school to school. In CU, masculine (32.2%) and androgynous (38.7%) students mostly preferred architectural consultancy, while the feminine (35.7%) mostly, preferred interior design as a future career. In CRU, the feminine students mostly opted mostly for interior design (44.4%) while their masculine (40%) and

androgynous (41.7%) colleagues mostly opted for building construction. In BUT, again like the other two schools, the feminine (57.1%) mostly opted for interior design and the androgynous (27.3%) mostly preferred architectural consultancy. The masculine opted for building construction. These choices had a significant relationship with student gender identity only in CRU (p=.008) and overall (χ^2=26.636, df= 8, p= .001) .

Table 4.30: Gender Identity and Career Aspirations

Career Aspiration By University		Categories	Student Gender Identity				*Fishers Exact Test. (2-sided)*
			Feminine N (%)	Androgynous N (%)	Masculine N (%)	Total N (%)	
Aspire to practise architecture in future?	CU	Yes	25 (54.3)	80 (82.5)	66 (67.3)	171 (71.0)	*.001*
		No/Undecided	21 (45.7)	17 (17.5)	32 (32.7)	70 (29.0)	
	CRU	Yes	8 (88.9)	19 (73.1)	9 (90.0)	36 (80.0)	*.528*
		No/Undecided	1 (11.1)	7 (26.9)	1 (10.0)	9 (20.0)	
	BUT	Yes	7 (100.0)	15 (68.2)	16 (94.1)	38 (82.6)	*.079*
		No/Undecided	0 (.0)	7 (31.8)	1 (5.9)	8 (17.4)	
	Total	Yes	40 (64.5)	114 (78.6)	91 (72.8)	245 (73.8)	*.100*
		No/Undecided	22 (35.5)	31 (21.4)	34 (27.2	87 (26.2)	
Most Preferred Area of Practice	CU	Architectural Consultancy	11 (26.2)	36 (38.7)	29 (32.2)	76 (33.8)	*.218*
		Building Construction	7 (16.7)	15 (16.1)	19 (21.1)	41 (18.2)	
		Real Estate/Others	7 (16.7)	16 (17.2)	19 (21.1)	42 (18.7)	
		Project Management	2 (4.8)	12 (12.9)	9 (10.0)	23 (10.2)	
		Interior Design	15 (35.7)	14 (15.1)	14 (15.6)	43 (19.1)	
	CRU	Architectural Consultancy	1 (11.1)	4 (16.7)	3 (30.0)	8 (18.6)	*.008*
		Building Construction	3 (33.3)	10 (41.7)	4 (40.0)	17 (39.5)	
		Real Estate/Others	1 (11.1)	0 (.0)	2 (20.0)	3 (7.0)	
		Project Management	0 (.0)	9 (37.5)	1 (10.0)	10 (23.3)	
		Interior Design	4 (44.4)	1 (4.2)	0 (.0)	5 (11.6)	
	BUT	Architectural Consultancy	0 (.0)	6 (27.3)	2 (12.5)	8 (17.8)	*.234*
		Building Construction	0 (.0)	5 (22.7)	6 (37.5)	11 (24.4)	
		Real Estate/Others	3 (42.9)	3 (13.6)	2 (12.5)	8 (17.8)	
		Project Management	0 (.0)	3 (13.6)	2 (12.5)	5 (11.1)	
		Interior Design	4 (57.1)	5 (22.7)	4 (25.0)	13 (28.9)	
	Total	Architectural Consultancy	12 (20.7)	46 (33.1)	34 (29.3)	92 (29.4)	*.001*
		Building Construction	10 (17.2)	30 (21.6)	29 (25.0)	69 (22.0)	
		Real Estate/Others	11 (19.0)	19 (13.7)	23 (19.8)	53 (16.9)	
		Project Management	2 (3.4)	24 (17.3)	12 (10.3)	38 (12.1)	
		Interior Design	23 (39.7)	20 (14.4)	18 (15.5)	61 (19.5)	

Source: Author's Fieldwork (2014-2016)

4.4.3 Gender and Students' Performance

The last obtained grade of the students in architectural design and the academic division the students belong to according to their cumulative grade point averages (CGPA) are summarised in Table 4.31. By observing the distribution through the lens of gender, there were no major differences in the students' grades in each of the three schools and overall. The Fisher's exact and Chi-square tests results showed that there

was indeed no statistically significant relationship between their gender and grades obtained in architectural design for that semester in any of the schools (CU: p= .854; CRU: p= .157; BUT: p= .421) and overall (χ^2=4.331, df=3, p=.228). When the academic divisions the students had attained was investigated for gender peculiarities, it was found that in two (CU: p=.000; CRU: p=.018) out of the three schools and overall (χ^2=28.570, df=3, p=.000), there were significant relationships with student gender. Overall, it was discovered that the females were mostly concentrated in the second class upper and first class divisions combined unlike the males who were mostly concentrated in second class upper and lower divisions.

Table 4.31: Gender and Academic Performance

Performance Variables/ University		Categories	Student Gender Male N (%)	Female N (%)	Total N (%)	*Fishers Exact Test. (2-sided)*
Last Grade in architectural design	CU	A	34 (19.0)	17 (23.0)	51 (20.2)	*.854*
		B	66 (36.9)	27 (36.5)	93 (36.8)	
		C	54 (30.2)	22 (29.7)	76 (30.0)	
		D/E/F	25 (14.0)	8 (10.8)	33 (13.0)	
	CRU	A	1 (2.9)	0 (.0)	1 (2.5)	*.157*
		B	11 (31.4)	1 (20.0)	12 (30.0)	
		C	10 (28.6)	4 (80.0)	14 (35.0)	
		D/E/F	13 (37.1)	0 (.0)	13 (32.5)	
	BUT	A	6 (25.0)	5 (41.7)	11 (30.6)	*.421*
		B	10 (41.7)	6 (50.0)	16 (44.4)	
		C	7 (29.2)	1 (8.3)	8 (22.2)	
		D/E/F	1 (4.2)	0 (.0)	1 (2.8)	
	Total	A	41 (17.2)	22 (24.2)	63 (19.1)	*.228*
		B	87 (36.6)	34 (37.4)	121 (36.8)	
		C	71 (29.8)	27 (29.7)	98 (29.8)	
		D/E/F	39 (16.4)	8 (8.8)	47 (14.3)	
Cumulative academic division obtained	CU	3rd Class/NGS	34 (16.9)	7 (9.2)	41 (14.8)	*.000*
		2nd Class Lower	94 (46.8)	19 (25.0)	113 (40.8)	
		2nd Class Upper	67 (33.3)	44 (57.9)	111 (40.1)	
		First Class	6 (3.0)	6 (7.9)	12 (4.3)	
	CRU	3rd Class/NGS	3 (8.6)	0 (.0)	3 (7.0)	*.018*
		2nd Class Lower	22 (62.9)	2 (25.0)	24 (55.8)	
		2nd Class Upper	10 (28.6)	4 (50.0)	14 (32.6)	
		First Class	0 (.0)	2 (25.0)	2 (4.7)	
	BUT	3rd Class/NGS	1 (5.6)	0 (.0)	1 (3.8)	*.559*
		2nd Class Lower	6 (33.3)	1 (12.5)	7 (26.9)	
		2nd Class Upper	11 (61.1)	7 (87.5)	18 (69.2)	
		First Class	0 (.0)	0 (.0)	0 (.0)	
	Total	3rd Class/NGS	39 (15.3)	8 (8.6)	47 (13.5)	*.000*
		2nd Class Lower	122 (47.8)	22 (23.7)	144 (41.4)	
		2nd Class Upper	88 (34.5)	55 (59.1)	143 (41.1)	
		First Class	6 (2.4)	8 (8.6)	14 (4.0)	

Source: Author's Fieldwork (2014-2016)

A total of 67.7 % of the females and 36.9% of the males were in second class and first class academic divisions combined, while 63.1% of the males and 32.3% of the females were in the second class lower division and below.

The gender identities, of the students also had no significant relationship with the grades obtained in the design studio in two of the schools (CRU: p= .368; BUT: p=.359) and overall (χ^2=12.018, df =6, p=.062). In CU, however, the relationship was significant (χ^2= 12.989, df =6, p=.043) with the proportion of masculine students having A (27.7%) and B (42.6%) grades greater than that of the androgynous (A=18.5%, B=38.0%) and feminine (A=13.6%, B=29.5%).

Table 4.32: Gender Identity and Academic Performance

Performance Variables/ University	Categories		Student Gender Identity: Feminine N (%)	Androgynous N (%)	Masculine N (%)	Total N (%)	*Fishers Exact Test. (2-sided)*
Last Grade in architectural design	CU	A	6 (13.6)	17 (18.5)	26 (27.7)	49 (21.3)	*.043*
		B	13 (29.5)	35 (38.0)	40 (42.6)	88 (38.3)	
		C	15 (34.1)	30 (32.6)	21 (22.3)	66 (28.7)	
		D/E/F	10 (22.7)	10 (10.9)	7 (7.4)	27 (11.7)	
	CRU	A	0 (.0)	0 (.0)	1 (10.0)	1 (2.6)	*.368*
		B	2 (25.0)	5 (23.8)	4 (40.0)	11 (28.2)	
		C	4 (50.0)	9 (42.9)	1 (10.0)	14 (35.9)	
		D/E/F	2 (25.0)	7 (33.3)	4 (40.0)	13 (33.3)	
	BUT	A	4 (66.7)	3 (21.4)	3 (23.1)	10 (30.3)	*.359*
		B	2 (33.3)	7 (50.0)	6 (46.2)	15 (45.5)	
		C	0 (.0)	4 (28.6)	4 (30.8)	8 (24.2)	
		D/E/F	0 (.0)	0 (.0)	0 (.0)	0 (.0)	
	Total	A	10 (17.2)	20 (15.7)	30 (25.6)	60 (19.9)	*.062*
		B	17 (29.3)	47 (37.0)	50 (42.7)	114 (37.7)	
		C	19 (32.8)	43 (33.9)	26 (22.2)	88 (29.1)	
		D/E/F	12 (20.7)	17 (13.4)	11 (9.4)	40 (13.2)	
Cumulative academic division obtained	CU	3rd Class/NGS	9 (19.6)	16 (16.3)	8 (8.2)	33 (13.6)	*.113*
		2nd Class Lower	19 (41.3)	34 (34.7)	39 (39.8)	92 (38.0)	
		2nd Class Upper	16 (34.8)	40 (40.8)	49 (50.0)	105 (43.4)	
		First Class	2 (4.3)	8 (8.2)	2 (2.0)	12 (5.0)	
	CRU	3rd Class/NGS	1 (11.1)	1 (4.3)	1 (10.0)	3 (7.1)	*.635*
		2nd Class Lower	4 (44.4)	15 (65.2)	4 (40.0)	23 (54.8)	
		2nd Class Upper	4 (44.4)	6 (26.1)	4 (40.0)	14 (33.3)	
		First Class	0 (.0)	1 (4.3)	1 (10.0)	2 (4.8)	
	BUT	3rd Class/NGS	0 (.0)	0 (.0)	1 (9.1)	1 (4.2)	*.313*
		2nd Class Lower	2 (66.7)	3 (30.0)	1 (9.1)	6 (25.0)	
		2nd Class Upper	1 (33.3)	7 (70.0)	9 (81.8)	17 (70.8)	
		First Class	0 (.0)	0 (.0)	0 (.0)	0 (.0)	
	Total	3rd Class/NGS	10 (17.2)	19 (14.3)	10 (8.4)	39 (12.6)	*.169*
		2nd Class Lower	25 (43.1)	52 (39.1)	44 (37.0)	121 (39.0)	
		2nd Class Upper	21 (36.2)	53 (39.8)	62 (52.1)	136 (43.9)	
		First Class	2 (3.4)	9 (6.8)	3 (2.5)	14 (4.5)	

Source: Author's Fieldwork (2014-2016)

Also the feminine had the greatest proportion of those who obtained C (34.1%) and D/E/F (22.7%) grades in that course (See Table 4.32) thus implying that the masculine outperformed the feminine and androgynous in architectural design in CU alone out of all three schools. There was no significant relationship however with student gender identity and academic division attained in any school (CU: p=.113;

CRU: p=.635; BUT: p=.313) and overall (χ^2= 9.126, df=6, p=.167). To investigate gender differences in the mean CGPA of the students, a Man-Whitney U test was conducted and the results are shown in Tables 4.33 and 4.34. The test revealed that in all three schools and overall, the female students (CU: *Mdn*=3.73; CRU: *Mdn*=4.01 ; BUT: *Mdn*=4.00; overall: *Mdn*=3.79) performed better than the males (CU: *Mdn*=3.15; CRU: *Mdn*=2.93; BUT: *Mdn*=3.59; overall: *Mdn*=3.15) (CU: *U*=5091.500 , *p*=.000 ; CRU: *U*=41.500 , *p*=.002 ; BUT: *U*=41.500 , *p*=.030; overall: *U*=7365.000 , *p*=.000).

Table 4.33: Overall CGPA scores and Gender

Gender / University		N	Mean	SD	Median	Mean Rank	Sum of Ranks
CU	Male	201	3.15	0.80	3.15	126.33	25392.50
	Female	76	3.59	0.76	3.73	172.51	13110.50
CRU	Male	35	3.12	0.65	2.93	19.19	671.50
	Female	8	3.98	0.48	4.01	34.31	274.50
BUT	Male	19	3.19	1.06	3.59	12.18	231.50
	Female	9	3.58	1.38	4.00	19.39	174.50
TOTAL	Male	255	3.15	0.80	3.15	156.88	40005.00
	Female	93	3.62	0.81	3.79	222.81	20721.00

Source: Author's Fieldwork (2014-2016)

Table 4.34: Statistical Test statistics for Gender and CGPA scores

University/ cumulative grade point average		
CU	Mann-Whitney U	5091.500
	Wilcoxon W	25392.500
	Z	-4.281
	Asymp. Sig. (2-tailed)	.000
CRU	Mann-Whitney U	41.500
	Wilcoxon W	671.500
	Z	-3.075
	Asymp. Sig. (2-tailed)	.002
	Exact Sig. [2*(1-tailed Sig.)]	.001[b]
BUT	Mann-Whitney U	41.500
	Wilcoxon W	231.500
	Z	-2.166
	Asymp. Sig. (2-tailed)	.030
	Exact Sig. [2*(1-tailed Sig.)]	.028[b]
TOTAL	Mann-Whitney U	7365.000
	Wilcoxon W	40005.000
	Z	-5.410
	Asymp. Sig. (2-tailed)	.000

a. Grouping Variable: Student gender
b. Not corrected for ties.

Source: Author's Fieldwork (2014-2016)

There was no significant difference in the CGPA of the students having various gender identities as shown by the result of the Kruskal Wallis test (see Table 4.35) that was conducted to investigate this. (CU: H(2)=2.478, p=.290; CRU: H(2)=1.620, p=.445; BUT: H(2)=2.297, p=.317; overall: (H(2)=4.384, p=.112).

Table 4.35: Overall CGPA Scores and Gender Identity

Gender Identity/ University		N	Mean	SD	Median	*Kruskal Wallis Test Statistics*			
						Mean Rank	***Chi-Square***	***df***	***Asymp.Sig.***
CU	Feminine	46	3.18	0.89	3.30	*109.93*			
	Androgynous	98	3.30	0.88	3.40	*119.40*	*2.478*	*2*	*.290*
	Masculine	98	3.44	0.70	3.56	*129.03*			
CRU	Feminine	9	3.34	0.80	3.14	*22.50*			
	Androgynous	23	3.16	0.63	2.93	*19.48*	*1.620*	*2*	*.445*
	Masculine	10	3.50	0.81	3.45	*25.25*			
BUT	Feminine	3	3.61	0.65	3.45	*13.67*			
	Androgynous	12	2.98	1.45	3.63	*11.17*	*2.297*	*2*	*.317*
	Masculine	11	3.60	0.96	3.90	*16.00*			
TOTAL	Feminine	58	3.23	0.86	3.30	*144.80*			
	Androgynous	133	3.25	0.91	3.34	*148.16*	*4.384*	*2*	*.112*
	Masculine	119	3.46	0.73	3.60	*168.92*			

Source: Author's Fieldwork (2014-2016)

4.4.4 Discussion of Findings

This section contains discussion of the findings on students' learning, aspirations and academic performance and experiential outcomes. The overall finding is that gender has significant impact on some of the experiential outcomes of learning in these schools of architecture individually and as a whole. Some of these differences were observed between biological sexes, some emanating from societal gender roles, while some have to do with gender identity.

Three factors were used to investigate the levels of satisfaction of the students with architecture. These are extent of satisfaction with architecture, feeling of choosing the wrong profession and ability to use architecture to express creativity. Out of these three factors, only the feeling of choosing the wrong profession had any significant relationship with the students' gender identity, which describes to what extent an individual sees himself as conforming with masculine or feminine traits. On the overall, a significantly greater proportion of feminine (57.4%) students than masculine or androgynous reported always or often feeling that they had chosen the wrong profession. This was somehow as to be expected as architecture had previously been described as a masculine course largely unsuitable or unfriendly for individuals with feminine traits (Ahrentzen & Groat, 1992) or females who were not very tough-skinned enough to withstand the rigours (Fowler & Wilson, 2004). More recent scholars like Kurjenoja (2013) and Niculae (2012) had discussed the masculine paradigm upon which architecture was founded and how challenging individuals who

could not fit into this paradigm were finding it to continue with architecture. It is important to note that some masculine students however were also found to have self - doubt issues about whether the choice to study architecture was right, nevertheless the proportion of feminine students who did surpassed the masculine. The mode of measuring of gender identity could be responsible for this; however the finding suggested that gender identity was a better factor than gender for investigating the variability of levels of satisfaction with studying architecture. It was important to note that not all females or feminine individuals who expressed self-doubt had the intention of leaving architecture for good as some said they would still like to take the career to the peak, despite the experienced rigours. When the various schools were however investigated, only among CU students was there a significant relationship with the students' gender identity. The most probable reason was because of the small sample size of the other schools.

In terms of their future aspirations, certain aspects were gender related. The plans to complete their studies was not related to gender but in all three schools and overall, significantly, more females than males were ambitious to complete their studies with first class results unlike most of the males who didn't seem to care so much about grades. Likewise on the overall and in CRU, feminine students more than any other gender identity were more keen to obtain first class grades. This was severally corroborated by some male students who said while been interviewed that female students were more interested and concerned about the grades they obtained. One of them said that,

> "They seem to be more motivated maybe in terms of schoolwork than guys…like more concerned about marks, things like that, academics or schoolwork "
>
> *- (Ope, male student, M.Sc. 1)*

This is also in line with the finding of Mau and Bikos (2011) that female students had higher educational aspirations than males.A possible explanation for this could also be the relatively high visibility of females in the school as suggested by Lynch and Feeley (2009) that higher numbers of females in a masculine academic setting usually gingers females to aspire to perform better in given tasks.

There was a significant relationship between the students' gender and the number of Nigerian male and female architects and international male architects whose works

were a source of inspiration to the students. Instances of gender peculiarities were detected from the above results. Firstly it could be rightly deduced that those who were most ignorant about architects in practice were female. This first suggests that males are more likely either by curiosity or seeking knowledge and information to know about architects and architecture. Secondly, the group of architects mostly visible are the international male architects. Among the female architects, only one Nigerian and one international personality was known. This is because these represent the groups which media give the greatest and least attention to (Stratigakos, 2001). It is important to note that these students collectively found a far greater number of male than female role models. This still highlights the fact that more light and celebration needs to be shed on the achievements of female architects and directly incorporated into the school curriculum, which is based on the patriarchal conventions of past models like several others worldwide. Many of the international male role models that were mentioned such as Le Corbusier, Frank Lloyd Wright and Robert Venturi were drawn from History of architecture classes and textbooks. Repeated reference was made to Robert Venturi by the students without reference being made to his female partner and collaborator of many years, Denise Scott Brown. The point being made is that the silence of these students about female role models is not because of the total absence of female role models but largely because there is poor visibility of them. Zaha Hadid and Jumoke Adenowo are popular because social media has highlighted their achievements. It is thus important that a conscious attempt be made to include fora for celebrating achievements of other female architects' role-models to 'gender blind' male and female students to inspire them before the society thrusts real-world gender issues at them, which could dampen or truncate their architectural aspirations. Having role models or mentors of the same or either biological sex (Baird & Hardy, 2003, Marra *et al.*, 2013; Kurjenoja, 2013) is of utmost importance in the making of seasoned professionals. When budding architects have someone they can look up to or emulate, it becomes somehow easier to attain aspired heights.

From the study, the major significant finding about career aspiration was that neither gender nor gender identity was significant in explaining the variability in the aspiration of the students to practise architecture in future with a few exceptions when individual departments were examined. This was at variance with the finding of De

Graft-Johnson *et al.* (2003) who found that women were more likely than men to leave architecture. To further shed light on the foregoing, the kind of practise to be involved was investigated and this revealed that both gender and gender identity were significant variables in explaining the students aspiration for various areas of practice or what the students intended to do in future with their architectural qualifications. Regarding gender, in all the three departments both individually and combined, interior design more than other fields held the greatest attraction to significantly larger proportion of females than males. For males, Architectural consultancy held the greatest attraction, second to which was building construction. Considering gender identities, combining all three schools, interior design held the greatest attraction to feminine students more than any other gender identity while architectural consultancy was most appealing to greatest proportion of androgynous and masculine students. This corroborates the finding of Lemkau, (1983) and Woosnam (2009) who found that physical androgyny and sometimes masculinity was a characteristic trait among female administrators in schools of architecture and females in male-dominated fields of studies generally.

This choice of interior design by most females is in line with previous findings (Ahrentzen & Groat, 1992; Clegg and Mayfield, 1999; Niculae, 2012) about women's place in design still being defined or conditioned largely by gender. Gender roles and stereotypes have largely socialised these female students into having conditioned their choices. The desire to practice interior design was confirmed during the course of interviews with 10 out of the 19 female students interviewed mentioning interior design as their most likely or a possible area of future specialisation. All their reasons encapsulated gendered themes. Some of their responses included,

> "…because… women, inside the house that's our area of specialisation"
>
> - (Bose, female student, 200-Level)
>
> "Because it's the more subtle part of architecture
>
> - (Marian, female Student, M.Sc. 2)
>
> "Interior is mostly a feminine thing"
>
> - (Bola, female student, 200-Level)

Likewise, many female participants in the interview expressed disdain for heavy construction work on site and opted for the 'easier' and more feminine parts of

architecture which was indoors. One female student specifically made a remark indicating a disdain for rugged undertakings by most female students:

> … 'I don't like that part of architecture and when I stay too long on a construction site, I begin to feel somehow"
>
> - (Chioma, female student, 300-Level)

Another female said that her experience in site supervision always saw her site instructions not being taken seriously or undermined by male artisans on site. There were however females who indicated a love for architectural consultancy or building construction and males who indicated interest in interior architecture or Design but these were not as frequent as those mentioned earlier. Further considering the aspiration or passion of the students, the interview revealed that the experience of studying architecture had impacted variously upon the passion and love the students have for architecture. Irrespective of level of study and gender the students all had various things to say. From the interview, it was obvious that the learning experience and gender were major modifiers of this passion for architecture, career aspiration and eventually the structure of the career goals. The female students had different descriptions of their zeal at the end of the academic session in which the interview took place. For some of them the zeal had become higher. One explanation given for this by one of them was because in her MSc class she found things easier, hence she was more motivated:

> "In 100-Level it was like 20% but now it's like 70% in MSc because of the ease in carrying out the work. I am not as stressed out as I was in BSc; I am more motivated when I know I can do a lot of work on my system without getting tired."
>
> - (Jola, female student, M.Sc. 1)

Some of them said their zeal was intact with one of them explaining that said it been redirected with a better understanding of architecture. For most of them however, (fifteen out of the twenty females interviewed), their zeal had reduced for various reasons. For some of them, it was due to redefined interest in other things like interior-design. For others the reduction was as a result of stress and discouragement and self-discovery to the fact that they had no natural flair or ability for meeting the creative demands, rigours and competitive nature of actual architectural practice. These reactions and resultant zeal however had different effects on their career aspirations especially in the face of gender roles and expectations. Ten out of the

twenty irrespective of the levels of their zeal said they were going to practise general architectural consultancy by working in an architectural firm at different stages of their careers, while 6 of them indicated intentions of specialising in interior design either because that appealed more to them or because they felt it was softer and more feminine. One had quit architecture school at the end of that session because she felt she would be better off being a mathematics teacher while another was contemplating going into furniture design because studying architecture was too rigorous for her. Another one said she was still looking for how to fit in and was trying to explore the idea of organic architecture while one said she wanted to quit architecture and explore other areas of art and design. For the male students, the levels of their aspiration also had been modified in different ways by the school experience. Out of the 16 males interviewed, 3 of them said their zeal had dropped one of them specifically said he found no fresh challenges he had modified dreams especially because he was closer to graduating and had seen reality. One said his zeal remained intact and the remaining ten said their zeal for architecture had increased with their increasing knowledge of the course.

These findings corroborate the findings of researchers (Correll, 2001, & Moreno, 2007; Silberstang, 2011) who had found that there were gender influences to the structure of career goals based on student experiences and socialisation. Both male and females spoke of their career goals and the structure was observed to be gendered in the sense that they conditioned their dreams largely by the roles that they were expected to play by their families and society especially some of those who were in the higher levels of study. On the part of the females, seeing that they were all Nigerian and aged between 20 years and 24 years, it was most expected that they begin to think about settling down to get married and have children. However because they were mostly from egalitarian backgrounds, the completion of their master's degree and becoming financially independent by joining the working class was also relatively important to them all. It was obvious that the closer they got to graduation, the more these thoughts loomed in their minds confirming the gendered structure of career goals. This was expressed by a feminine female student in the first year of the master's class. When she was asked about how often she found herself thinking of the future, she said:

> "All the time and what I would do...like at the beginning of this semester, I actually started asking my siblings and my mum… is there anyone that wants to do a house, because I'm beginning to think I'm leaning too much on them at this stage of my life and I shouldn't be."
>
> - (Janet, female student, M.Sc. 1)

The consciousness of being close to the end of the course and closer to reality had brought to life another level of reasoning. For some males, earning money became a priority for them. Some of the males were observed to be involved in commercial activities geared at money making. A male student in 400-Level was observed to be frequently absent from classes and his explanation was that he had to earn money for personal upkeep. Another one in the same level of study was involved in making artworks for sale. One male student engaged in buying and selling drawing materials for students. One was known to be in paid employment in the civil service. Some were into fashion designing at various levels. Some were also involved in building design for people at a fee. These money making activities tagged PP (private practice) was quite common among the males. One female student said about the male students,

> "The boys are… majority of the boys, they want to make money, that's all they are thinking about… even within school they are ready to help people with their work just to get money."
>
> - (Janet, female student, M.Sc. 1)

This reality was best expressed by Dare, a male student in the final year of the master's program, who was known to always leave school in search of business deals. He was one of the few males who said their zeal for architecture had dropped. His reason for this as he said was because

> "I'm just there, I'm just here, there's a [feeling] it's getting to the real world, it's not as easy as you think o"
>
> - (Dare, male student, M.Sc. 2)

He had earlier given an explanation of why earning money became very important to him. He said,

> "most times in our societies these days, one boy out there, just coming out for himself, doesn't have anything… but I've seen my friends we grew up together… they say come and work for me…an architect getting thirty, forty thousand naira in a month…How will I graduate and come and collect thirty or forty thousand Naira, when that's our pocket money on the average in this school…I want to make things happen before my time."

For this male student, the focus was on earning money for upkeep while for the females, other things were involved. However, Moreno (2007) found that female college students were more likely than their male counterparts to think about domestic aspects of life in relation to their occupational aspects of life. This was evident from the career goals of a female student in 400-Level who said:

> "My plans …after masters, I want to do my two years of practise, hopefully I will get posted to an architectural firm then practise for one year, then getting my NIA certificate, then I want to practise in an architectural firm first then end up in a federal government office because, I've looked at it all around…I want to be a mother definitely, so in a federal government office, the time is more flexible than anywhere else."
>
> - (Linda, female student, 400-Level)

This aspiration to get all these qualifications before getting married was largely informed from watching her mother's inability to advance with studying when caught up with raising her and her siblings despite previous plans which she wanted to avoid. Her desire to also get paid employment was also as a result of her seeing her mother stepping in to support the family financially, while her dad had some challenges. When asked why she didn't just go for the federal government office first, her explanation showed that she had actually given those issues a lot of thought. She said thus,

> because I want to be able to stand on my own first because when I was doing my research, in a federal government office, at an entry level, you only get paid one hundred and twenty thousand naira with a B.Sc degree, but at the moment, am a student, I can say am spending a lot more than that, so I want to be able to stand on my own before…going there is just like saying I want to relax…even if I want to establish my own, I was reading about a lady that said she started her own firm. She said it wasn't easy. A lot of sacrifices she went through and luckily for her, her firm stood but what if it wasn't able to pull through and all of that, all these things, am considering the risk in all of that.
>
> - (Linda, female student, 400-Level)

The case of Linda cited above confirms the findings of Baird (2005) who found that the experience or career situations of mothers influenced the career goals of their daughters. Baird's work also gives evidence of how career goals of females are socially embedded. This gendered structure of career goals varied to different degrees

as some tried to marry their career goals with architecture like Linda and Janet, while some like Bimpe wanted to give it up all together as seen in their voiced aspirations:

> "I still want to practice, architecture…I've seen women that have been able to balance…if I get married and I'm in an understanding marriage, it will take a lot of my energy…maybe instead of waking up at six, if I wake up at four to make sure school runs and all. So even if I can't cope, that's why I'm considering going into a branch of architecture not full building architecture, either landscape or interior because it is not as demanding as building architecture…that is because am a woman."
>
> - (Janet, female student, M. Sc1)

> "As for me, I really do not want to practise architecture because I love to have fun, I love to be happy and am not getting it from architecture because what I see is stress and work and work and work and go to site and keep on working…I would love to be a musician…housewife to take proper care of the family "
>
> - (Bimpe, female student, 300-Level)

Overall, it was seen that for both females and males, the school experience modified their zeal and love for the course with females managing or enduring to stick through school against the face of all odds but when it comes to career time the aspirations of most of the females and males were defined largely by separate factors which are in line with societal expectations and influences thus confirming the existence of gender differences in the aspiration aspect of Learning outcomes.

From the findings on the students' academic performance, it was discovered that females in the three departments generally performed better than the males. They scored higher than the males cumulatively. This confirms the position of Kurjenoja (2013) who asserted that females in schools of architecture generally make good students. When compared with similar studies in architectural education such as that by Demirbas and Demirkan (2007) carried out in the department of interior architecture of Bilkent University, Turkey, there were similarities. The similarity was that the females in both studies scored significantly higher than the males in the semester GPA. In another study by Demirbas and Demirkan (2010) in the same school using senior students, there was no relationship between gender and student performance score. This disparity could be as a result of the levels of study under comparison being different. The scores in the present study reflected that of almost

whole departments while that of Bilkent belonged to senior students. This is in line with research which reports academic performance of males beginning to fall behind that of females in tertiary institutions (Castagnetti & Rosti, 2009; Conger and Long, 2010). These findings on performance of architecture students however differs with that of Roberts (2007) who found that gender could not be used to predict academic performance.

Considering gender identities, the masculine scored higher than the feminine in architectural design in CU alone. Since architectural design is a very important course in the department, it could be said that the learning context in the design studio in CU favoured the masculine partly lending credence to the assertion by previous researchers (Stratigakos, 2001; Ruedi Ray, 2001, Anthony, 2002; De Graft-Johnson *et al.,* 2003, Niculae, 2012) that architecture is a masculine field of study that privileges masculine attributes. What may be responsible for the overall higher performance of the females may not be readily identified but can only be at best suggested. First, the females were found to be generally well socially supported. Having social support from mentors, siblings and teachers was found by Hazari, Tai and Sadler, (2007) to be a strong booster of academic performance for female students. Moreover, social support in the forms of emotional concern, instrumental aid, information and appraisal (Taylor, 2011) plays a major role in negative situations and allows the person so affected to keep the stressful situation under control thereby allowing the person to focus attention on the task at hand to deal with the objective situation (Nurullah, 2012). This emotional support from mentors, siblings and teachers in the form of instrumental aid, information and appraisal described in different forms in the responses of the females to different areas of the survey and interviews all played an instrumental role in their described journey to architecture as distinct and different from that of the males and played a major role in helping them focus on the task at hand, thus boosting their academic performance. Secondly, the generally more studious nature of females compared to males as perceived by a number of the students may have contributed to their overall higher academic performance. The causes of this may be attributed to several factors beyond the scope of this study.

In this chapter the various outcomes of the study experiences of the students have been discussed with mixed findings. The performances of the students have also been

discussed. Overall, the outcomes have been mixed for both male and females. Considering satisfaction with the course of study, the gender identity of the students rather than gender was a significant factor where the androgynous and masculine were better satisfied than the feminine. In terms of career aspirations, gender was found to be a modifying factor. In terms of Grade Point Averages however the females outperformed the males both using frequencies and comparing means showing that the females in these schools of architecture generally tended to perform better than their male counterparts.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of the Work

In this final chapter, the major findings of this study are discussed. It contains first of all a broad description of the research; secondly, it contains a summary of the key findings of the work. The implications of the study are also discussed while further areas of research are suggested before concluding remarks are made.

Gender issues had been raised in certain schools of architecture in more developed countries of the world. It thus became necessary from gaps identified in the literature reviewed to investigate and study the status of females in school of architecture in Nigeria because there was a paucity of studies addressing these issues. Some studies on architectural education in Nigeria were encountered in the literature but none addressed the issue of gender and its impact on student experience in architecture. This work investigated gender issues in learning and its outcomes in three private universities in Ogun State, Nigeria with a strong focus on one of them as recommended for feminist research which advocates depth rather than width; the research design combined both quantitative and qualitative methods. The data were gathered principally employing surveys, interviews and ethnographic observations.

The first three chapters comprised of the introduction, literature review and methodology, respectively. The fourth chapter contained the results and findings from the study all discussed amply with each section addressing each objective in line with the research questions. Though a chapter is dedicated to all objectives, attempt was made to interlace the findings from each objective with experiential issues, and perceptions as narrated by the students themselves or as observed by the researcher.

5.1.1 Summary of Key Findings and Implications

These findings are discussed under four sections in line with the objectives of the study as outlined in the introduction.

Gender Characteristics of Students

1. There was gender inequality in student enrolment in the three schools combined. The group was tilted in composition with males (75.4%) constituting a greater proportion than females (24.6%). Out of the three schools, CU had the highest

proportion of females, while CRU had the least. CU (28.6%) and BUT (24.6%) had tilted compositions, while CRU (14.1%) was skewed with a token female minority and dominant male majority. Overall, males (*Mdn*=21 years) were significantly older than females (*Md*n=20 years) with the difference highest in CRU. Compared to males (21.3%), a significantly small proportion of females (8.1%) were of Northern Nigerian origin.

2. Most of the students (86.3%) irrespective of gender came to study architecture by self-volition. Gender peculiarities that emerged from narratives of how students came to study architecture included vocational self-efficacy, social persuasion, vicarious experience, previous experience and lastly by constraint or compulsion. Females recorded more instances of social persuasion and vocational self-efficacy towards "softer concerns" while males tended more towards vocational self-efficacy, vicarious experience, and previous experience.
3. The most prevalent gender identity both for males (44.8%) and females (41.5%) was androgynous. As to be expected males had a higher proportion of masculine individuals (41.4%) and females had a higher proportion of feminine (30.9%) individuals. Cross sex typing was more prevalent among females (27.7%) than males (13.8%) corroborating the idea that architecture is generally more attractive to masculine individuals.

Gender and Learning Patterns

4. Out of the four processing patterns, gender was found to have a significant relationship with the levels of use of TP (*p=.037)* and CP (*p=.037*) with a higher proportion of males than females using them first. Gender identity had significant relationship with levels of use of PP (p=.046) and CP (p=.005) with higher proportion of masculine than feminine or androgynous using them first. The results from individual schools were mixed.
5. In all, females and males were found to have significantly different levels of dexterity with the various processing patterns. Males were more balanced with higher median scores in SP than CP while females were more imbalanced with higher median scores in SP than TP and CP and in PP than TP and CP. For Gender Identities, only the feminine and androgynous had differing levels of dexterities. The androgynous were higher in SP than TP and CP. The feminine

were higher in SP than TP and CP and higher in PP than CP. These findings suggest that there is a need for females more than males and feminine more than androgynous to put in more energy and effort than males for architecture which needs a balance in all four abilities. Masculine individuals appeared to be the most balanced. Focus on the schools however showed that these were significant only in CU.

6. Overall, males were significantly higher than females in TP and CP. Also, in all, masculine were higher than feminine and androgynous in TP and masculine were higher than feminine in CP. There were few and mixed significant gender identity differences only in CRU and CU.
7. Learning schema distributions only had significant relationship with gender in CU and CRU with various school peculiarities.

Gender, Preferences, Experiences and Perceptions

8. Overall, among all courses offered in the departments, Interior Design (17.2%) , History of Architecture (17.2%), and Building Structures (15.1%) were the courses loved best by highest proportion of females, while for males Architectural Design (20.4%) and CADD (17.3%) held the highest preference. This was only significant and similar in CU with the gender preferences being very similar.
9. It was found out that both male and female students generally preferred male lecturers to female lecturers in design studio (59.7%). The reasons given for these preferences were mainly based on three themes of previous experience, greater acceptability and stereotypes. Stereotypes were the most popular reason given by most students implying a persistence of the popular paradigm of masculine stardom in architectural circles.
10. The strongest deduction about student experience was that the students' experiences differed according to the level of study and gender role perception. In each of the levels of study, there were observed gender differences which derived largely from student perceptions more often than the actual experience. Overall, female students were generally found to have a more challenging academic experience and to strive more for academic success than the male students.
11. The perceptions given by the students from their school experience about gender and studying architecture had several patriarchal connotations. Both male and

female students indicated a belief in male advantage and female disadvantage in several areas. One major area was in the psychological make-up with males judged better in handling physical and emotional stress. Many females agreed that the fact that people already thought that architecture was for males was a strong discouraging factor for women. Most believed that boys were better in design articulation and graphical expression and females in theoretical and written courses and some believed that females succeeding in design courses were due to favouritism on the part of the lecturers. Some males and females however were of the opinion that gender does not matter if you have passion for the course. Overall, both males and females were of the consensus that for girls to be recognized in the field of architecture, they have to work harder than their male counterparts.

Gender and Outcomes of Experiences and Learning

12. Frequency of feeling they had chosen the wrong profession had a significant relationship with student gender identity with the feminine (57.4%) always, or often reporting this feeling.
13. More females (68.1%) aspired to graduating with the highest academic division. There was no significant relationship between the students' aspiration to practice architecture in the future and their gender and gender identity. The type of practice chosen however had a relationship with gender and gender identity. The aspiration of the males tended towards architectural consultancy (31.8 %) and building Construction (27.5%), while the females preferred interior design (44.3%) and architectural consultancy (22.7%).
14. Investigating the awareness of role models according to gender revealed that males were more aware of practising architects either male or female and that media coverage played a significant role on creating awareness about female architects. Analysing the aspirations shared by females also revealed that the career goals of females were considerably structured by gender roles which they expected to assume upon graduation. Those of males were less restricted compared to the females.
15. The gender and gender identity of the students did not have a significant relationship with the grades obtained in architectural design except in CU where

significantly higher proportion of feminine students scored D/E/F grades in Design that semester. Suggesting that the learning context of the Design Studio in CU favoured masculine students.

16. Overall, the females performed better than the males. There was a significant relationship found between gender and academic division of result obtained with more females (67.7%) than males (36.9%) in the first class and second class upper divisions combined. Gender identities did not have any significant relationship with the academic division of the students at the end of that semester.
17. It was found that in all three schools and overall, the female students (CU: *Mdn*=3.73; CRU: *Mdn*=4.01; BUT: *Mdn*=4.00; overall: *Mdn*=3.79) had higher median CGPAs than the males.

5.2. Implications of Study Findings

Having highlighted the contributions to knowledge, it is necessary to discuss the implications of those findings that have direct relevance to teaching and learning, to policies of architectural education and to research. The findings generally showed some differences and inequalities between the experiences of the males and females in the course of their studies. The goal of the United Nations is to create equitable outcomes for everyone especially as regards to gender. This section discusses the implications of the findings of this study.

5.2.1 Implications for Policy

First and foremost, it was discovered that females were underrepresented in the Schools of architecture with this being a recurrent finding in many contexts over the years. While gender parity in the enrolment in schools of architecture has being achieved in countries like the United States of America it is imperative that direct steps to achieve this be taken in Nigeria. The United Nations has a consensus that there are cascading benefits of women being involved in every sphere of life as they are known to bring a unique touch to whatever they do. There should thus be a plan for action towards encouraging more females to study architecture. This is the direct responsibility of the professional body which is the Nigerian Institute of Architects and specifically the Female Architects of Nigeria which was set up as an arm of the Institute to promote the welfare of women within the institute. Also, a conscious

attempt to recruit more female faculty to balance the numbers would be a welcome idea.

Secondly, since females are fewer in number, a conducive atmosphere free of discrimination of any kind should be created in schools of architecture to ensure the comfort and maximization of their educational experience. This is necessary because scholars like Lynch and Feeley (2009) have highlighted that females tend to feel alienated where their numbers are small hereby breeding tokenism (Corroto, 1996). Lecturers and indeed the male students should also be educated to be gender sensitive to both specific needs of male and female students in order to create equitable outcomes for males and females. Also, the findings on female students preferring Interior Design to other courses suggest that females generally have a flair for domestic and softer things than males who on the other hand prefer mainline Architectural Design and Building Construction. This implies that there is a need to introduce more options for specialization for students in architectural studies so that females can also focus on that which interests them. A wide range of specialisation options like interior Architecture, Urban Design, Product Design, Digital Architectural, Graphic Design, Landscape Design, Architectural Theory and History, Housing Studies and Building Structures should be offered in schools of architecture since it has become obvious that the conventional department of architecture that is today present in many Nigerian universities has become deficient in handling the aspirations of the students. There is a need for the metamorphosis of this structure into the school of art and Design or School of Design offering various specialisation options as in many schools in the United States of America, Canada, and Australia.

5.2.2 Implications for Teaching and Learning

It was discovered in the course of this study that there were gender differences in the Learning Patterns of the students. The findings revealed that most females were dynamic in their learning schema; it thus becomes necessary for the lecturer to engage in intentional teaching as suggested by Dawkins *et al.* (2010). This concept was originally initiated in consonance with the Learning Combinations Inventory, which this study was partly based upon. The first step is to constantly let the students evaluate themselves based on this assessment to determine the current situation of their learning schema and together with teachers engage intentional teaching

juxtaposed with intentional learning. Intentional teaching comes into play by the lecturer giving a wide range of assignments or learning tasks breaking them into tasks that can cater for the diverse abilities of the students. For female students who were found to use confluent and technical processing as needed, the lecturers may have to give elementary tasks focusing on how to forge these patterns in them to develop it. For instance, a design assignment focusing on designing something else rather than a building could be embedded in the studio task for that semester to ginger the confluence level of the females. Also since most students seemed to rely heavily on sequential processing, tasks involving this could be tethered meaning done away with for some time with a bid to forge or intensify technical and confluent processing which were generally lower among females. Intentional Learning on the part of the students would proceed after they understand their respective learning schema and would involve them taking personal responsibility for their developing certain aspects of their learning schema as demanded by Self-regulated learning principles. When merged with closely working with instructors, to determine or map out their learning tasks with the instructors, there would be an increased level of self- efficacy and eventually bolster the self-confidence level and performance of both male and female students in all types of courses.

Secondly, it was discovered that most students in these schools of architecture had greater belief in male lecturers with this being modified when they had enjoyed experienced a female lecturer teaching them the same course. The implication of this is that more female lecturers be drafted to teach certain courses like Building Structures or History of Architecture or Building Components to break the stereotype or males to teach Interior Design. An active step to combat the stereotypes of what females or males could do should be taken just to encourage those with the natural inclinations for activities that were not stereotypical.

Thirdly, pedagogy of architecture should be free of patriarchy and on the broader context all forms of sexism based on stereotypes. Faculty should avoid making sexist remarks or any behaviour that would make a male or female feel overvalued or undervalued. It should be noted that the aim of sexual equality agenda is not to treat males and females in exactly the same way, but to give them treatment based on their realities and natural differences to produce equitable outcomes for both male and

female students. A good example of this is in a jury where some strong criticism is meted out to a student. A male student may receive this criticism well but a female student may react more strongly and negatively to this. To be objective, depending on the personality of the individual, the reverse may be the case. This is where the task lies and it should be noted that gender equality is not all about women but only tends to appear so because women have been at the receiving end of been marginalised and there is a complex interplay of factors controlling this. It is however necessary for architectural educators to be sensitive in relating to their students and always aim to bring out the best in the individual irrespective of gender. More light will be shed on this in the next subsection.

5.2.3 Implications for the Society at Large

The section of this study discussing outcomes of learning are loaded with implications for the society at large especially in the areas of future aspirations of the students and the performance in courses. The future aspirations of the students show that after experiencing school of architecture, how the students feel, their academic performance and what the students want to do are largely controlled by gender.

There is the overwhelming evidence that gendered patterns of socialisation are responsible for these differences. Female students perform better not because they have greater mental abilities but because most of them have been socialized to work hard in the school, perform better and are usually more subject to parental control and despite limitations of lack of inherent skill and talent, still attempt to want to make their parents proud by enduring in the face of difficulty and obeying. This level of parental control has positive results towards the performance of the females. The males on the other hand who have not been so socialized and are subject to freedom and adventure, often are not found to be so compliant and many take their academics lightly.

From the findings of this study as previously highlighted, all these differences and inequalities have their root in forces and patterns of socialisation. More females perform better because they are so socialized, more females are less confident of undertaking roles like construction and architectural consultancy because that is what they have been socialized into, more females structure their career goals to fit with traditional patterns because they are socialized into it. This socialisation comes

sometimes consciously or unconsciously from family and most times unconsciously from peers, religion and largely media. These imply that despite the fact that the females in this school largely were from egalitarian families and professed personally egalitarian gender ideology about architecture, agencies of socialisation in the Nigerian society still largely pass across a messages of fear and insecurity to young females portraying them as helplessly weak and vulnerable and greatly limited because of their gender to compete favourably in the workplace and balance this with family gender roles. There is the need for mass reorientation of our socialisation agencies in Nigeria to create a balance in these values. Females should be educated of the possible implications of sex roles but at the same time, should be encouraged to keep on being upwardly mobile in their careers because some women have made high achievements and with determination can succeed in any chosen field of endeavour if they be so endowed.

5.2.4 Implications for Research

Gender issues in Learning architecture and its outcomes have been investigated previously but in a piecemeal manner and sometimes using cross school samples. From the in-depth study carried out, findings that are loaded with implications for further research emerged. This study has demonstrated that an in-depth approach to studying gender is more revealing and will help architectural educators especially in Nigeria in particular and Africa as a whole to understand the position of the female architect from school to practice and will further shape pedagogical practices. The conceptual framework for the gender analysis used for this study could be replicated for further studies in other architectural learning contexts. Using the Learning Combinations Inventory, the specific strengths and weaknesses of each student and indeed the whole student body for both genders was exposed and the implications and how to intentionally teach and facilitate learning tasks to maximize deep learning in all students was understood. Also incorporating gender identity helped to reveal that there were different kinds of males and females with varying learning dispositions. Finding out the course preferences of the various genders was also useful to guide how to develop specialisation programs in the school of architecture. In addition, the findings on the learning experiences and perceptions of gender influences to learning architecture was quite revealing the need for shifting paradigms in socializing

children to be gender aschematic. The conceptual framework for this study is recommended for further studies and will hopefully contribute to shaping architectural education and architectural practice for greater diversity and gender equity.

5.3. Recommendations and Areas for Future Study

5.3.1 Recommendations

Recommendations of this study can summarily be stated as follows:

1. Concerned agencies should reach out to talented female students at early ages to show them the options available for them in architectural education and debrief them of gender schematic paradigms.
2. A more conducive atmosphere for female students especially free of sexist discrimination or patriarchy of all forms should be created in schools of architecture.
3. There is the need to offer specialisation courses and options to cater for the diverse talents of the male and female students at all levels
4. To maximize the learning experience, specialist input such as the intentional teaching and learning platform of the LCI should be embraced to cater for the varied learning needs of the different kinds of male and female students in the school.
5. There is a continuous need for massive societal re-orientation to raise gender aschematic individuals despite the various gender realities so as not to inhibit individuals from maximizing their potential.

5.3.2 Suggestions for Future Studies

This study focused on analysing gender issues in learning architecture in private universities and as such its implications may not be necessarily generalizable but it creates suggestions for future studies in architectural education in the following areas:

1. Similar studies should be replicated in other learning contexts of architectural education to find out what unique situations obtain there. Possible contexts include other states, public universities and other types of institutions like polytechnics or other courses apart from design studio.
2. Larger and more time intensive studies such as comparative gender analysis between more schools of architecture should be embarked upon to enlighten us of similarities or differences.

3. Other groups of gender issues such as that of faculty in architectural education should be conducted.

5.4 Conclusion

In conclusion, this study has shown that the male to female ratio of student enrolment into department of architecture in the private universities in Ogun state was tilted in the favour of the males. Also most of the students were found to have androgynous and masculine gender identity showing that architecture indeed is a masculine field of study.

It was also found out that there were gender and gender identity differences in the learning patterns of the students. The male students and masculine gender identities had a greater balance in their learning schema than the females and feminine who were more dynamic. This suggests that female students struggled more in the design studio where the use of all four learning patterns were needed.

Both male and female students reported the school experience as stressful, challenging and difficult. The experiences were found to get easier as they advanced in their level of study but the transition was not as easy for females, feminine and dynamic students like masculine and strong willed learners. There were exceptions, with self-efficacy, project connectedness and social support mitigating for these. Concerning the perceptions of the students about gender influences to the study of architecture, most of the students believed that gender influenced the study in several ways and believed that females had to put in more effort to succeed than their male counterparts.

Finally, the school experience was satisfactory for the students but there were gender differences in the students' aspirations and overall performance. While females succeeded in school, the desire to practice is not there because social forces and gender roles offer little support. These findings revalidated gender issues in some previous piecemeal studies but generated salient gender issues that need further investigation.

5.5. Contributions to Knowledge

Having highlighted the findings of this study, it is necessary to state the contributions made to knowledge. The main contribution is that architectural education has been examined for gender differences and inequalities in the Nigerian context and the specific contributions are highlighted as follows:

1. It improves the understanding of how learning experiences vary by gender among the students of Architecture in private universities in Ogun State, Nigeria;
2. It develops a framework that can be used for gender analysis in general and in the context of architectural education; and
3. It identifies the specific needs of female and male architecture students in enhancing their academic performance in private universities in Nigeria.

5.6 Concluding Remarks

The main distinguishing feature of this work is the depth dimension which it involved in investigating students learning patterns, experience and its outcomes from a gender perspective by completely disaggregating the analysis according to gender and its various types. This has created a possible template for gender analysis of student learning issues in architectural education. This study has shown that combining learning issues with experiential issues and examining them alongside their outcomes will give a clearer understanding of how gender impacts on architectural education in the Nigerian context.

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APPENDICES

Appendix 1: Enrolment into Nigerian Universities, 1999-2009
(Source: Fapohunda, 2011)

Table 3: University Undergraduate Full Time Enrolment by Sex in Nigerian Universities (1999 – 2009 Academic Years)

Year	Total	Male	%	Female	%
1999- 2000	316545	216349	68.4	100196	31.6
2000 – 2001	358758	231633	64.6	127125	35.4
2001 – 2002	444949	274131	61.6	170818	38.4
2002 – 2003	606194	373778	61.6	232326	38.4
2003 – 2004	720393	489276	67.9	231117	32.1
2004 – 2005	724856	466159	64.3	258697	35.7
2005 – 2006	762173	513491	67.4	248682	32.6
2006– 2007	780543	518,243	66.4	262300	33.6
2007 – 2008	789301	520,762	66.0	268539	34.0
2008 – 2009	801,367	522139	65.2	279228	34.8

Source: National University Commission Data Bank, Abuja

Table 4: Enrollment in Nigerian Universities by gender and Faculty (2007/2008) Academic Year.

Year	Total	Male	%	Female	%
Admin/Management Sciences	96957	*64976*	67	*31981*	33
Agriculture	48385	*32513*	67.2	*15872*	32.8
Arts	79606	*52416*	65.8	*27190*	34.2
Education	102834	*67822*	66	*35012*	34
Engineering / Technology	64889	*51479*	79.1	*13410*	20.7
Environmental Science	33736	*26217*	77.7	*7519*	22.3
Law	38080	*24492*	64.4	*13588*	35.7
Medicine	45709	*29721*	65	*15988*	35
Pharmacy	9143	*6509*	71.1	*2634*	28.9
Science	98863	*75043*	75.9	*23320*	24.1
Social Science	117515	*78387*	66.7	*39128*	33.3
Veterinary Medicine	3744	*2983*	79.7	*761*	20.3
Dentistry	2805	*1943*	69.3	*862*	30.7

Source: National University Commission Data Bank, Abuja

Appendix 2: Survey Instrument 1- The Questionnaire

Questionnaire number_____

Dear Respondent,
This questionnaire was designed to collect data for an on-going research on gender and learning in architecture. Kindly endeavour to supply the correct answers according to the **actual situation** rather than the ideal situation what you think the answer should be. Also try to be as honest and objective as possible to facilitate the accurate findings.
Remain assured that all information will be treated with utmost confidentiality and will be used strictly for academic purposes.
Thank you for your co-operation
Omoyeni Fulani

Section 1A- Background Information

1. Level of study_____
2. Student gender male_____[1] female_____[2] Religion_____
3. Nationality_____ Tribe/Ethnic group_____ Age by end of this year_____
4. The secondary school I attended was___ Single sex___[1] Co-educational(mixed sex)___[2]
5. My coming to study architecture was _____
   By compulsion_____[1] By accident_____[2] By my choice_____[3]
6. My choice to study architecture was due to_____
   My love for art_____[1] My talent for art, drawing, design/ creativity_____ [2] Admiration for architects/architecture___[3]
7. Who do you have as an architect either qualified, practising or student
   Father_____[1] Mother_____[2] Close female relative or sibling_____[3]
   Close male relative or sibling_____[4] None_____[5]
8. Father's highest educational qualification
   OND_____[1] HND_____[2] 1st degree___[3] Master's degree_____[4] PHD_____[5]
   Others(please specify)_____[6]
9. Mother's highest educational qualification
   OND_____[1] HND_____[2] 1st degree_____[3] Master's degree_____[4] PHD_____[5]
   Others(please specify)_____[6]
10. Kindly supply the highest grades you obtained in your O'level exams in the following subjects e.g. A1, B2 etc

SUBJECTS	Mathematics	English Language	Fine arts	Geography	Physics	Economics	Technical Drawing
GRADES							

11. Pocket money per month (Tick which is appropriate)
    Less than N10, 000___ [1] N10, 001-N30, 000___ [2] N30, 001-N50, 000___ [3] N50, 001-N70, 000____ [4]
    N70, 001-N90, 000___[5] above N90, 000____[6]
12. Who bears the major responsibility for funding your education?
    Both parents_____[1] Father alone_____[2] Mother alone_____[3]
    Self -Scholarship_____[4] Combinations of alternatives above e.g a and b_____[5] Please mention Others_____[6]
13. To what extent are you satisfied with architecture as a course of study?
    Highly satisfied_____[1] satisfied___[2] somehow satisfied_____[3] dissatisfied___[4] Highly dissatisfied___[5]
14. How able are you to express your creativity in the school of architecture?
    Very able_____[1] able___[2] Somehow able ___[3] Not able at all __[5]
15. I feel that I chose the wrong profession
    Always_____[1] Often_____[2] Sometimes_____[3] Rarely_____[4] Never_____[5]
16. What division do you aspire to graduate with?
    First class_____[1] Second class, upper_____[2] Second class, Lower _____[3] Third class_____[4]
    Undecided_____[5]
17. State what you **LIKE** best about studying architecture _____
    _____
18. State what you **DISLIKE** best about studying architecture _____
    _____
19. Do you plan to complete your course in architecture?
    No, I'm quitting architecture_____[1] Yes, both B.SC and M.SC_____[2]
    Only B.Sc., M.Sc. in architecture in another school. _____[3] Only B.Sc., M.Sc. in a related field_____[4]
    Only B.Sc., Masters in another discipline entirely_____[5]

1

20. Would you like to practise architecture in future?
Yes___[1] No___[2] Undecided ____[3]

21. In what capacity would you like to practise? E.g.
Architectural consultancy___ [1] construction___ [2], Lecturing___ [3]
Property development___ [4] project management___ [5] building material manufacture___ [6]
interior design___ [7] landscape architecture____ [8]

22. If no, what other career would you like to explore? _____
_____

23. Mention 3 prominent Nigerian and international male and female architects each whose works inspire you

Nigerian Male Architects	Nigerian female Architects	International male Architects	International female Architects
1.	1.	1.	1.
2.	2.	2.	2.
3.	3.	3.	3.

24. If I could choose, my Building structures lecturer, it would be Male___[1] Female___[2]

25. Give reasons for your answer _____
_____

SECTION B

26. Score yourself on the scale of 1 to 7 described below indicating how much the word describes you. Indicate your score in the table e.g

Item no	Item	Score		Item no	Item	Score
1.	Acts as a leader		**SCALE**	31.	Has leadership abilities	
2.	Adaptable(Flexible)		**1 =Never or Almost Never True**	32.	Moody	
3.	Affectionate		**2 = Usually Not True**	33.	Loves children	
4.	Conceited (full of oneself)		**3 = Sometimes but Infrequently True**	34.	Reliable	
5.	Aggressive		**4 = Occasionally True**	35.	Independent	
6.	Cheerful		**5 =Often True**	36.	Loyal	
7.	Ambitious		**6 = Usually True**	37.	Individualistic	
8.	Conscientious (to be meticulous)		**7 = Always or Almost Always True**	38.	Secretive	
9.	Childlike			39.	Sensitive to the needs of others	
10.	Conventional			40.	Sincere	
11.	Analytical			41.	Makes decisions easily	
12.	Compassionate			42.	Shy	
13.	Assertive			43.	Masculine	
14.	Friendly			44.	Solemn	
15	Does not use harsh language			45.	Soft-spoken	
16.	Happy			46.	Tactful	
17.	Athletic		**SCALE**	47.	Self-reliant	
18.	Eager to soothe hurt feelings		**1 =Never or Almost Never True**	48.	Sympathetic	
19.	Competitive		**2 = Usually Not True**	49.	Self-sufficient	
20	Helpful		**3 = Sometimes but Infrequently True**	50.	Theatrical	
21	Feminine		**4 = Occasionally True**	51.	Tender	
22	Inefficient		**5 =Often True**	52	Truthful	
23.	Defends own beliefs		**6 = Usually True**	53.	Strong personality	
24	Receptive to Flattery		**7 = Always or Almost Always True**	54.	Understanding	
25	Dominant			55.	Willing to take a stand	
26.	Jealous			56.	Unpredictable	
27	Gentle			57.	Warm	
28.	Likable			58.	Unsystematic (Disorganised)	
29.	Forceful			59.	Willing to take risks	
30	Gullible(easily deceived)			60.	Yielding	

SECTION C

27. Take the time you need and consider your responses as truthfully and carefully as possible. Score yourself on a scale of 1 to 5 shown below which is most accurate to whom you are.

Kindly supply your email address_____

1	I prefer tasks where I get to use mechanical/technical tools and equipment,		Never ever[1]
2	I need to have a complete understanding of the directions before I feel comfortable starting an assignment.		Almost never[2]
3	I become frustrated when I have to wait patiently for someone to finish giving directions,		Sometimes [3]
4	Before I begin any work assignment, I research as much information about it as possible,		Almost Always[4]
5	I become frustrated if I am given a second task to do before I have completed the first,		Always[5]
6	I prefer to build things by working without anyone's supervision.		
7	I pride myself in giving factually correct answers to the questions I am asked,		
8	I don't like to do my work in just one way, especially when I have a better idea I would like to try.		
9	I automatically take notes whenever I listen to a presentation.		
10	I clean up my work area and put things back where they belong as soon as I finish a task.		
11	I enjoy the challenge of fixing or building something.		
12	I react quickly to assignments and questions without thinking through my answers,		
13	I am told by others that I am very organized.		
14	I ask more questions than most people because I just enjoy knowing things,		
15	I like to figure out how equipment and machinery work.		
16	I like to make up my own way of doing things.		
17	I would rather build a project than read or write about a subject.		Never ever[1]
18	I need to make lists and develop a plan before I start an assignment.		Almost never[2]
19	I instinctively want to correct others whose information or answers are not totally accurate		Sometimes [3]
20	I generate lots of unique and creative ideas.		Almost Always[4]
21	I feel better when I have time to double check my answers.		Always[5]
22	I like to take things apart to see how they work.		
23	I aspire to discover new approaches of doing tasks for the pleasure of doing things differently.		
24	I am interested in knowing detailed information about whatever I am researching,		
25	I look for well-documented, factual articles and manuals to read.		
26	I like the feeling of operating mechanical tools in my hand.		
27	I keep a neat desk, or work area.		
28	I am willing to risk offering new ideas even in the face of discouragement,		

Please answer the following 3 questions as truthfully as possible to give valid results

29. What makes assignments frustrating for you? _____

_____

30. If you could choose, what would you do to show what you have learned?

_____

_____

31. What hobby, sport, or interest do you enjoy? How would you teach someone else to do it?

_____

28. From the list of courses below choose any 4 courses you like and starting with the one you love best and list them in the spaces provided

-History of Architecture__(1)
-Building Structures__(2)
-Building Services__(3)
-Architectural Graphics__(4)
-Traditional architecture__(5)
-CADD__(6)
-Urban design__(7)
-Building Components __(8)
- Land Surveying__(9)
- Landscape architecture__(10)
-Interior design__(11)
-Building Law__(12)
-Professional practice__(13)
-Environmental Science__(14)
- Building Quantities__(15)
-Architectural Design__(16)
-Visual Communication__(17)

1_____ 2_____ 3_____ 4_____

29. My last grade in architectural design studio was/enjoy Building structures lectures.

A____[1] B____[2] C____[3] D____[4] E____[5] F____[6]

30. My Cumulative Grade Point Average(CGPA) is _____

Appendix 3: Instrument 2-The Interview Guide

1. Narrate the events leading to your enrolment in school of architecture ……..

2. **Specific to respective Levels of study**
   -How did you as a male/female student navigate through **200-Level** which officially is the entry into architecture school and tagged by students as a period of confusion and frustration? Describe your own experience.

   -How did you as a male/female student navigate through **300-Level** described as initially challenging and later stabilising? Describe your own experience.

   -How did you as a male/female student navigate through **400-Level** described as clear and transitional? Describe your own experience in the Industrial attachment and how has it impacted on your experience this session.

   -How did you as a male/female student navigate through **Msc1**, the beginning of a professional degree Have you done NYSC? Describe your own experience in the NYSC and MSc so far.

   -How did you as a male/female student navigate through **Msc2**, the ending of a professional degree? Describe your own experience and how you feel so far.

3. The idea of a female architect is still strange to some people. What do you think about a female architect? Why are there few famous female masters?

4. Do you think males and females cope with demands of studying architecture equally? How does gender affect this? Give your own perceptions based on your own experience

5. As a male/female student, narrate your first/any other remarkable encounter/experience of…….. Talk about specific courses. What sense have you made of them individually? Do you participate differently in the classes, why?
   A) Design-the first time you were given a design assignment/making a model, what did you make of it, how did you go about it? What challenges did you encounter?
   B) Structures
   C) Components
   D) graphics/CAD
   E) History

6. What is your working pattern? Daily routine? How immersed are you in school social life/extra-curricular activities?

7. Speak about your aspirations? How much are you enjoying/ fulfilled with this course? Is your zeal still as high as when you came in? Why?

8. What do/don't you like about architecture? What excites you most in the school? What frustrates you most?

Appendix 4: Tests for Students Ethnicity

				Student gender					
				Male		Female		Total	
				Count	%	Count	%	Count	%
University	CU	Student ethnicity Regrouped	South West	110_a	(61.1)	49_a	(64.5)	159	(62.1)
			South South	31_a	(17.2)	14_a	(18.4)	45	(17.6)
			South East	23_a	(12.8)	8_a	(10.5)	31	(12.1)
			North East/ NorthWest/North Central	16_a	(8.9)	5_a	(6.6)	21	(8.2)
	CRU	Student ethnicity Regrouped	South West	4_a	(10.0)	5_b	(62.5)	9	(18.8)
			South South	0^1	(.0)	1_a	(12.5)	1	(2.1)
			South East	0^1	(.0)	0^1	(.0)	0	(.0)
			North East/ NorthWest/North Central	36_a	(90.0)	2_b	(25.0)	38	(79.2)
	BUT	Student ethnicity Regrouped	South West	18_a	(62.1)	8_a	(53.3)	26	(59.1)
			South South	5_a	(17.2)	5_a	(33.3)	10	(22.7)
			South East	5_a	(17.2)	1_a	(6.7)	6	(13.6)
			North East/ NorthWest/North Central	1_a	(3.4)	1_a	(6.7)	2	(4.5)
	Total	Student ethnicity Regrouped	South West	132_a	(53.0)	62_a	(62.6)	194	(55.7)
			South South	36_a	(14.5)	20_a	(20.2)	56	(16.1)
			South East	28_a	(11.2)	9_a	(9.1)	37	(10.6)
			North East/ NorthWest/North Central	53_a	(21.3)	8_b	(8.1)	61	(17.5)

Note: Values in the same row and subtable not sharing the same subscript are significantly different at p< .01 in the two-sided test of equality for column proportions. Cells with no subscript are not included in the test. Tests assume equal variances.[2]

1. This category is not used in comparisons because its column proportion is equal to zero or one.

2. Tests are adjusted for all pairwise comparisons within a row of each innermost subtable using the Bonferroni correction.

Pearson Chi-Square Tests

				Student gender
University	CU	Student ethnicity Regrouped	Chi-square	.712
			df	3
			Sig.	.870
	CRU	Student ethnicity Regrouped	Chi-square	18.358
			df	2
			Sig.	.000[*,b,c]
	BUT	Student ethnicity Regrouped	Chi-square	2.290
			df	3
			Sig.	.514[b,c]
	TOTAL	Student ethnicity Regrouped	Chi-square	9.982
			df	3
			Sig.	.019[*]

Results are based on nonempty rows and columns in each innermost subtable.

*. The Chi-square statistic is significant at the .05 level.

b. More than 20% of cells in this subtable have expected cell counts less than 5. Chi-square results may be invalid.

c. The minimum expected cell count in this subtable is less than one. Chi-square results may be invalid.

Appendix 5: Tests for Gender and Educational Background

type of secondary school attended * Student gender

Chi-Square Tests

University		Value	*df*	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
CU	Pearson Chi-Square	8.650[a]	1	.003	.005	.004	
	Continuity Correction[b]	7.404	1	.007			
	Likelihood Ratio	7.941	1	.005	.007	.004	
	Fisher's Exact Test				.007	.004	
	Linear-by-Linear Association	8.613[c]	1	.003	.005	.004	.003
	N of Valid Cases	239					
CRU	Pearson Chi-Square	3.210[d]	1	.073	.114	.078	
	Continuity Correction[b]	1.936	1	.164			
	Likelihood Ratio	3.647	1	.056	.114	.078	
	Fisher's Exact Test				.114	.078	
	Linear-by-Linear Association	3.134[e]	1	.077	.114	.078	.069
	N of Valid Cases	42					
BUT	Pearson Chi-Square	1.706[f]	1	.192	.292	.172	
	Continuity Correction[b]	.905	1	.341			
	Likelihood Ratio	1.857	1	.173	.292	.172	
	Fisher's Exact Test				.292	.172	
	Linear-by-Linear Association	1.672[g]	1	.196	.292	.172	.130
	N of Valid Cases	50					

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 8.32.
b. Computed only for a 2x2 table
c. The standardized statistic is -2.935.
d. 2 cells (50.0%) have expected count less than 5. The minimum expected count is 3.24.
e. The standardized statistic is 1.770.
f. 1cells (25.0%) have expected count less than 5. The minimum expected count is 3.84.
g. The standardized statistic is 1.293.

O Level score in Mathematics * Student gender

Chi-Square Tests

University		Value	*df*	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
CU	Pearson Chi-Square	4.020[a]	2	.134	.140		
	Likelihood Ratio	3.897	2	.143	.144		
	Fisher's Exact Test	3.884			.144		
	Linear-by-Linear Association	3.011[b]	1	.083	.084	.050	.016
	N of Valid Cases	246					
CRU	Pearson Chi-Square	3.394[c]	2	.183	.200		
	Likelihood Ratio	5.006	2	.082	.143		
	Fisher's Exact Test	3.172			.224		
	Linear-by-Linear Association	.796[d]	1	.372	.454	.266	.140
	N of Valid Cases	45					
BUT	Pearson Chi-Square	3.599[e]	2	.165	.213		
	Likelihood Ratio	3.720	2	.156	.236		

	Fisher's Exact Test	3.276			.248		
	Linear-by-Linear Association	.322[f]	1	.571	.638	.370	.160
	N of Valid Cases	47					

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 19.63.
b. The standardized statistic is -1.735.
c. 3 cells (50.0%) have expected count less than 5. The minimum expected count is 1.78.
d. The standardized statistic is .892.
e. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 1.91.
f. The standardized statistic is -.567.

O Level score in Geography * Student gender

Chi-Square Tests

University		Value	*df*	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
CU	Pearson Chi-Square	.222[a]	2	.895	.903		
	Likelihood Ratio	.222	2	.895	.903		
	Fisher's Exact Test	.265			.903		
	Linear-by-Linear Association	.129[b]	1	.720	.766	.396	.074
	N of Valid Cases	233					
CRU	Pearson Chi-Square	6.946[c]	2	.031	.029		
	Likelihood Ratio	7.824	2	.020	.024		
	Fisher's Exact Test	6.025			.036		
	Linear-by-Linear Association	6.422[d]	1	.011	.016	.011	.009
	N of Valid Cases	40					
BUT	Pearson Chi-Square	.428[e]	2	.807	.905		
	Likelihood Ratio	.433	2	.805	.905		
	Fisher's Exact Test	.483			.905		
	Linear-by-Linear Association	.034[f]	1	.854	1.000	.520	.179
	N of Valid Cases	35					

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 10.73.
b. The standardized statistic is .359.
c. 3 cells (50.0%) have expected count less than 5. The minimum expected count is 1.58.
d. The standardized statistic is -2.534.
e. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 2.60.
f. The standardized statistic is -.184.

O Level score in Physics * Student gender

Chi-Square Tests

University		Value	*df*	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
CU	Pearson Chi-Square	.524[a]	2	.770	.802		
	Likelihood Ratio	.523	2	.770	.802		
	Fisher's Exact Test	.607			.735		
	Linear-by-Linear Association	.018[b]	1	.894	.914	.492	.086
	N of Valid Cases	247					
CRU	Pearson Chi-Square	4.238[c]	2	.120	.150		
	Likelihood Ratio	4.940	2	.085	.116		
	Fisher's Exact Test	3.436			.199		
	Linear-by-Linear Association	.012[d]	1	.914	1.000	.551	.207
	N of Valid Cases	45					

BUT	Pearson Chi-Square	.417[e]	2	.812	.884		
	Likelihood Ratio	.422	2	.810	.790		
	Fisher's Exact Test	.602			.884		
	Linear-by-Linear Association	.270[f]	1	.603	.796	.396	.179
	N of Valid Cases	48					

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 7.09.
b. The standardized statistic is .133.
c. 4 cells (66.7%) have expected count less than 5. The minimum expected count is 1.07.
d. The standardized statistic is -.108.
e. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 1.00.
f. The standardized statistic is -.520.

O Level score in Technical Drawing * Student gender

Chi-Square Tests

University		Value	*df*	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probability
CU	Pearson Chi-Square	1.196[a]	2	.550	.556		
	Likelihood Ratio	1.225	2	.542	.556		
	Fisher's Exact Test	1.222			.544		
	Linear-by-Linear Association	.967[b]	1	.326	.369	.192	.055
	N of Valid Cases	202					
CRU	Pearson Chi-Square	3.036[c]	2	.219	.364		
	Likelihood Ratio	2.401	2	.301	.659		
	Fisher's Exact Test	3.341			.227		
	Linear-by-Linear Association	2.734[d]	1	.098	.130	.130	.104
	N of Valid Cases	22					
BUT	Pearson Chi-Square	4.290[e]	2	.117	.134		
	Likelihood Ratio	4.081	2	.130	.193		
	Fisher's Exact Test	3.968			.176		
	Linear-by-Linear Association	2.092[f]	1	.148	.223	.114	.070
	N of Valid Cases	37					

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 10.81.
b. The standardized statistic is .983.
c. 5 cells (83.3%) have expected count less than 5. The minimum expected count is .27.
d. The standardized statistic is -1.653.
e. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 2.59.
f. The standardized statistic is -1.446.

Appendix 6: Statistical Test for Student Age by Gender

Mann-Whitney Test

Ranks

University		Student gender	N	Mean Rank	Sum of Ranks
CU	age by end of this year	Male	167	124.33	20762.50
		Female	69	104.40	7203.50
		Total	236		
CRU	age by end of this year	Male	33	23.71	782.50
		Female	8	9.81	78.50
		Total	41		
BUT	age by end of this year	Male	30	24.35	730.50
		Female	17	23.38	397.50
		Total	47		

Test Statistics[a]

University		age by end of this year
CU	Mann-Whitney U	4788.500
	Wilcoxon W	7203.500
	Z	-2.072
	Asymp. Sig. (2-tailed)	.038
CRU	Mann-Whitney U	42.500
	Wilcoxon W	78.500
	Z	-2.972
	Asymp. Sig. (2-tailed)	.003
	Exact Sig. [2*(1-tailed Sig.)]	.002[b]
BUT	Mann-Whitney U	244.500
	Wilcoxon W	397.500
	Z	-.237
	Asymp. Sig. (2-tailed)	.813

a. Grouping Variable: Student gender
b. Not corrected for ties.

Report
age by end of this year

University	Student gender	N	Median	Mean	Std. Deviation
CU	Male	167	20.00	20.71	1.939
	Female	69	20.00	20.12	1.595
	Total	236	20.00	20.54	1.862
CRU	Male	33	23.00	22.61	2.235
	Female	8	20.00	19.88	1.458
	Total	41	22.00	22.07	2.360
BUT	Male	30	19.00	19.70	1.784
	Female	17	19.00	19.59	1.805
	Total	47	19.00	19.66	1.773
Total	Male	230	21.00	20.85	2.111
	Female	94	20.00	20.00	1.620
	Total	324	20.00	20.60	2.017

Appendix 7: Wilcoxon-Signed Rank Test comparing LCI Patterns

Ranks

Student gender	University			N	Mean Rank	Sum of Ranks
Male	CU	PP - SP	Negative Ranks	90[a]	80.47	7242.50
			Positive Ranks	68[b]	78.21	5318.50
			Ties	12[c]		
			Total	170		
Female	CU	PP - SP	Negative Ranks	34[a]	33.13	1126.50
			Positive Ranks	26[b]	27.06	703.50
			Ties	11[c]		
			Total	71		

a. PP < SP b. PP > SP c. PP = SP

Student gender	University			N	Mean Rank	Sum of Ranks
Male	CU	TP - SP	Negative Ranks	94[a]	72.57	6821.50
			Positive Ranks	61[b]	86.37	5268.50
			Ties	15[c]		
			Total	170		
Female	CU	TP - SP	Negative Ranks	47[a]	36.11	1697.00
			Positive Ranks	19[b]	27.05	514.00
			Ties	5[c]		
			Total	71		

a. TP < SP b. TP > SP c. TP = SP

Student gender	University			N	Mean Rank	Sum of Ranks
Male	CU	CP - SP	Negative Ranks	93[a]	81.70	7598.00
			Positive Ranks	60[b]	69.72	4183.00
			Ties	17[c]		
			Total	170		
Female	CU	CP - SP	Negative Ranks	51[a]	33.57	1712.00
			Positive Ranks	13[b]	28.31	368.00
			Ties	7[c]		
			Total	71		

a. CP < SP b. CP > SP c. CP = SP

Student gender	University			N	Mean Rank	Sum of Ranks
Male	CU	TP - PP	Negative Ranks	80[a]	77.78	6222.00
			Positive Ranks	75[b]	78.24	5868.00
			Ties	15[c]		
			Total	170		
Female	CU	TP - PP	Negative Ranks	46[a]	37.34	1717.50
			Positive Ranks	23[b]	30.33	697.50
			Ties	2[c]		
			Total	71		

a. TP < PP b. TP > PP c. TP = PP

Student gender	University			N	Mean Rank	Sum of Ranks
Male	CU	CP - PP	Negative Ranks	83[a]	84.99	7054.00
			Positive Ranks	72[b]	69.94	5036.00
			Ties	15[c]		
			Total	170		
Female	CU	CP - PP	Negative Ranks	48[a]	29.16	1399.50
			Positive Ranks	12[b]	35.88	430.50
			Ties	11[c]		
			Total	71		

a. CP < PP b. CP > PP c. CP = PP

Student gender	University			N	Mean Rank	Sum of Ranks
Male	CU	TP - CP	Negative Ranks	69[a]	72.86	5027.50
			Positive Ranks	84[b]	80.40	6753.50
			Ties	17[c]		
			Total	170		
Female	CU	TP - CP	Negative Ranks	35[a]	33.71	1180.00
			Positive Ranks	31[b]	33.26	1031.00
			Ties	5[c]		
			Total	71		

a. TP < CP b. TP > CP c. TP = CP

Test Statistics[a]

Student gender	University		PP - SP
Male	CU	Z	-1.675[b]
		Asymp. Sig. (2-tailed)	.094
Female	CU	Z	-1.562[b]
		Asymp. Sig. (2-tailed)	.118

a. Wilcoxon Signed Ranks Test b. Based on positive ranks. c. Based on negative ranks.

Student gender	University		TP - SP
Male	CU	Z	-1.391[b]
		Asymp. Sig. (2-tailed)	.164
Female	CU	Z	-3.785[b]
		Asymp. Sig. (2-tailed)	.000

a. Wilcoxon Signed Ranks Test b. Based on positive ranks.

Student gender	University		CP - SP
Male	CU	Z	-3.117[b]
		Asymp. Sig. (2-tailed)	.002
Female	CU	Z	-4.504[b]
		Asymp. Sig. (2-tailed)	.000

a. Wilcoxon Signed Ranks Test b. Based on positive ranks.

Student gender	University		TP - PP
Male	CU	Z	-.317[b]
		Asymp. Sig. (2-tailed)	.751
Female	CU	Z	-3.054[b]
		Asymp. Sig. (2-tailed)	.002

a. Wilcoxon Signed Ranks Test b. Based on positive ranks. c. Based on negative ranks.

Student gender	University		CP - PP
Male	CU	Z	-1.810[b]
		Asymp. Sig. (2-tailed)	.070
Female	CU	Z	-3.576[b]
		Asymp. Sig. (2-tailed)	.000

a. Wilcoxon Signed Ranks Test b. Based on positive ranks. c. Based on negative ranks.

Student gender	University		TP - CP
Male	CU	Z	-1.579[b]
		Asymp. Sig. (2-tailed)	.114
Female	CU	Z	-.477[c]
		Asymp. Sig. (2-tailed)	.633

a. Wilcoxon Signed Ranks Test b. Based on negative ranks. c. Based on positive ranks.

Appendix 8: Test for LCI patterns and gender identity

Kruskal-Wallis Test

Ranks

University		Student Gender Identity with3 parts	N	Mean Rank
CU	SP	feminine	46	114.35
		androgynous	97	122.93
		masculine	97	120.99
		Total	240	
	PP	feminine	46	109.02
		androgynous	97	120.77
		masculine	97	125.68
		Total	240	
	TP	feminine	46	103.61
		androgynous	97	115.94
		masculine	97	133.07
		Total	240	
	CP	feminine	46	96.85
		androgynous	97	116.88
		masculine	97	135.34
		Total	240	
CRU	SP	feminine	8	27.25
		androgynous	24	18.19
		masculine	10	24.85
		Total	42	
	PP	feminine	8	23.94
		androgynous	24	17.33
		masculine	10	29.55
		Total	42	
	TP	feminine	8	26.00
		androgynous	24	18.88
		masculine	10	24.20
		Total	42	
	CP	feminine	8	18.00
		androgynous	24	20.46
		masculine	10	26.80
		Total	42	
BUT	SP	feminine	7	18.36
		androgynous	18	21.97
		masculine	15	19.73
		Total	40	
	PP	feminine	7	22.14
		androgynous	18	19.25
		masculine	15	21.23
		Total	40	
	TP	feminine	7	18.14
		androgynous	18	18.44
		masculine	15	24.07
		Total	40	
	CP	feminine	7	17.43
		androgynous	18	21.92
		masculine	15	20.23
		Total	40	

Test Statistics[a,b]

University		SP	PP	TP	CP
CU	Chi-Square	.487	1.810	6.357	10.111
	df	2	2	2	2
	Asymp. Sig.	.784	.404	.042	.006
CRU	Chi-Square	4.286	7.438	2.686	2.715
	df	2	2	2	2
	Asymp. Sig.	.117	.024	.261	.257
BUT	Chi-Square	.593	.407	2.249	.764
	df	2	2	2	2
	Asymp. Sig.	.743	.816	.325	.682

a. Kruskal Wallis Test
b. Grouping Variable: Student Gender Identity with3 parts

Overall

Ranks

	Student Gender Identity with3 parts	N	Mean Rank
SP	feminine	61	159.31
	androgynous	139	160.67
	masculine	122	163.54
	Total	322	
PP	feminine	61	154.10
	androgynous	139	154.43
	masculine	122	173.26
	Total	322	
TP	feminine	61	147.33
	androgynous	139	150.63
	masculine	122	180.98
	Total	322	
CP	feminine	61	130.70
	androgynous	139	158.26
	masculine	122	180.59
	Total	322	

Test Statistics[a,b]

	SP	PP	TP	CP
Chi-Square	.104	3.153	8.691	12.065
df	2	2	2	2
Asymp. Sig.	.949	.207	.013	.002

a. Kruskal Wallis Test
b. Grouping Variable: Student Gender Identity with3 parts