

Gender and Academic Performance in Architecture: A Case Study of Caleb University, Nigeria

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Abstract

Academic performance is a key determinant of successful completion of an educational endeavor at all levels as poor performance frequently leads to students dropping out of school, a waste of resources, and dissatisfaction on the part of both students and parents. This study aimed at examining the influence of gender on academic performance of architecture students at the undergraduate level with specific objectives to identify the influence of gender on performance. The study employs a structured questionnaire in data gathering and statistical tools (SPSS) in analyzing the data gathered. 167 randomly selected undergraduate Architecture students in 200 level to 400 level at Caleb University, Lagos, Nigeria where the study sample as same research has been conducted in other university. The assessment focused on Cumulative Grade Point Average (CGPA), disposition to academic activities, perception of the course, motivation, and school atmosphere. The result reveals that female students have a higher current CGPA (4.21) compared to males (3.71), indicating stronger overall academic performance. However, male students outperform females in studio-related courses, as shown by their higher average studio grade (2.24 vs. 1.93) and last studio grade (2.51 vs. 1.95). This suggests that while females excel in theoretical coursework, they may struggle with practical studio projects, whereas males perform better in hands-on design tasks but have a lower CGPA. This study, therefore, recommends integrating balanced teaching methods that connect theory with practical application that can help both groups achieve more well-rounded academic success.

Keywords: Academic Performance, Architecture Students, Educational Endeavor, Gender, Undergraduate Students.

Introduction

Gender is an identity that each person must discover independently, but it also carries patterns and trends from groups of people over time (Cheek et al., 2023). Orji et al (2021) opined that gender is often linked with uneven power and access to options and resources, and it also refers to the process of socialisation that determines the qualities, attitudes, and identities of both men and women. Ovejas (2025) reported that gender frequently determines whether children attend or continue in school. Further reiterated that, girls are more likely than boys to drop out of school around the world, and the poorest girls/women from the most impoverished rural areas have the lowest levels of educational attainment.

A 15-year-old review of evidence concluded that "extensive research confirms that investing in girls' education delivers high returns not only for female educational attainment, but also for maternal and children's health, more sustainable families, women's empowerment, democracy, income growth, and productivity" (Evans et al., 2020). Former World Bank President Jim Yong Kim stated that "investing in gender equality and girls' education isn't just the right thing to do; economically, it's one of the smartest things to do" (United Nations, 2020).

Education is a human endeavor that prepares the individual for life and for the future as it helps in making informed decisions. Willingness and effort to learn seems to be influenced by a lot more factors and not only gender as expressed by Dangol and Shrestha (2020). In a study on educational endeavor and contribution of readiness to learn amongst school students of Nepal, the derived result revealed that all dimensions (student, school, and family) elucidated the high level of learning readiness among students. Some school of thoughts inclines to believe that while learning readiness may be influenced by a lot of other factors, the motivation to learn certain subjects may be impacted by gender as shown in the article by Oga-Baldwin and Fryer (2020). Research investigating the impact of gender on academic achievement at university has yielded a range of results, with many studies indicating that it is relevant, while others show no difference. Large amounts of evidence suggest that male students underperform relative to female students (Crowther & Briant, 2022).

According to Yusuf and Elfaki (2022), women have significantly increased their educational achievement, outperforming men in several countries in public examinations. Furthermore, women's participation and success in previously male-dominated fields have increased dramatically. Zhang et al. (2024) has it that innovative thinking abilities have no significant gender differences. The etiological starting point for studying the phenomenon of school failure or success in males and females are being determined by various factors which is more than gender. These factors are investigated from several angles, including the involvement of students, instructors, parents or family, school environment, society, government, and so on. However, from the report of Salako, Adediran and Adebajo (2024), if success is judged in terms of attainment rather than participation and retention, there are significant gender disparities as boys do considerably worse in reading and are more likely to be classified as having special educational needs. While girls perform slightly worse in mathematics than boys (within-country differences exist) and are, on average, under-represented among mathematics, science, and technology students and graduates, the gap between female and male school performance is smaller in mathematics than in reading. Scholars have long been interested in gender variations in academic performance. Indeed, males have historically had a higher enrolment in STEM topics at the tertiary levels of education than girls, and their overall academic achievement has been ranked higher (Wrigley-Asante et al., 2023).

To this end, the study aimed at examining the influence of gender on academic performance of architecture students at the undergraduate level with specific objectives to:

- i. identify the demographic characteristics of the respondents; and
- ii. assess the academic performance trend by gender.

Literature Review

Students' Academic Performance

The academic performance of a student is very important not only in tertiary institutions but all through academic pursuits. Academic success is determined by the knowledge and skills that students have acquired during their education. Since the beginning of education, students' performance in subjects or courses taught has been used to assess how well they did at the end of each semester or term (Olowookere, Omonijo, Odukoya, & Anyaegbunam, 2020). Students' average overall marks of all courses studied per specific semester of the academic calendar year form the final academic performance results (Muzenda, 2021). A variety of other factors contribute to a student's academic success, according to Olowookere et al. (2020) communication, access to learning resources, proper guidance, and family stress all have an impact on a student's performance. While family stress has a negative effect on student's performance, the other three factors have a positive effect. However, a conducive learning environment, quality and effective teaching techniques, government and school intervention on rules and regulations, and access to equal opportunities irrespective of their gender will enhance the academic performance of the students.

The emphasis on academic excellence, which is also prominent internationally, has prompted several investigations into the factors that foster it. Academic achievement is unavoidable as a predictor of one's life success, academic placement in schools to higher institutions, and employability in one's job (Angwaomaodoko, 2023). A student's academic success may be associated with their social identity (Hu & Cheung, 2021). Gender inequalities in academic performance vary depending on the subject or discipline of study; for example, men may score better in mathematics while women perform better in biology. Each subject or discipline has a unique profile of how gender and other social variables interact to influence academic achievement. For example, "research has discovered that there are instructional methods, learning styles, and interests that can be characterised as distinctly female" (Crowther & Briant, 2022). Ogden, Olseth, Sørli, and Hukkelberg (2023) highlighted that longitudinal studies show that boys and girls acquire social skills similarly. However, there are gender inequalities in the degree of social skills, with boys receiving lower mean evaluations than girls independent of informant (Sørli et al., 2020). The impact of social skills on future academic achievement appears to be moderate, and its extent depends on how much emphasis instructors and institutions place on social and cooperative components of learning. Numerous research have indicated that psychological resilience is a critical capability for students to be successful in an academic setting, but few have examined this relationship from a gender standpoint (Gil, 2024).

Gender Disparities in Architecture Education

Architecture refers to the space that humans utilise and inhabit. At the 1984 Pritzker Architecture Prize Ceremony, Richard Meier (1984) stated, "architecture is crucial and enduring because it encompasses us; it defines space, space we move through, exist in, and use" (Pasenidou, 2024). Architectural is distinct from other disciplines by its emphasis on apprenticeship. It necessitates collaboration, specialised equipment, and shared workspaces. It is one of the fields in which students learn via experience in a studio setting as the design studio is the centre of architecture education; it is the culmination when theoretical information and technical experience gathered from other courses are introduced along with skill development in design (Saleh, Abdelkader, & Hosny, 2023). "Architecture is all about the elements of the physical factor which combined the elements of art and science. It consists of three basic human needs which include the protective elements, artistic and symbolic and the economy" (Hettithanthri, Hansen, & Munasinghe, 2023).

The prospective professional apprenticeship is developed and modelled within the design studio. The design studio is fundamental to most industrial design curriculum, and it is where students learn to visually depict parts of a problem as well as think like a designer. The design studio is at the center of most industrial design programs and is a location where students learn to conceptualize and portray parts of a problem graphically, as well as think like a designer (Cho, Lee & Kim, 2023). Sharif, Alshdiefat, Lee, Rana and Ghunmi (2024) expressed that architecture is frequently considered a male profession. In industrialised countries like the US and UK, women architects make up an equal proportion of the whole workforce, with an average contribution of 15-20% based on education and registration. A crucial area of concern is that, despite the increasing number of women in architectural professions, the disparity is difficult to bridge, as men continue to outnumber women internationally. Females are more likely to pursue careers linked to social studies, such as education and social sciences, whereas males pick jobs related to engineering and technology courses (Preradović, Maksimović, & Kosić-Jeremić, 2023). Although female enrolment in architectural schools has increased since the 1980s, the number of female architects in practice has levelled off, and the higher the career ladder, the fewer females there are. Gender equality remains a struggle in the field of architecture (Savitri, 2021).

Does Gender Influence Academic Performance?

Gender, according to the Oxford English Dictionary, is the state of being male or female. Its emphasis is on social and cultural ways rather than the biological ways of the people. In addition, gender has been discussed based on different paradigms ranging from individual cultural heritage and value; sex; opportunities; societal exposure; growth; and social engagement. However, different opportunities are available to both males and females regardless of individual sexual orientation and academic attainment, which play a key role in the growth of a society. In literature, gender is said to have considerable effects on students' academic performances (Ranjeeth, Latchoumi, & Paul, 2020) development and,

practices of all sectors (George et al., 2021). Many researchers have addressed the various factors that influence students' academic performance. These include internal and external classroom factors such as socioeconomic status of students, household composition and size of students, home environment, personal characteristics of students (attitude), social structures including relationships with peers, parents' involvement in their child's education, gender, aptitude, motivation, quality and quantity of teachers (Oyadokun, Odunjo & Amao, 2023).

Recent studies in developing nations indicate significant progress in female academic performance, despite ongoing issues with access to education and under-representation in STEM programs at undergraduate and postgraduate levels (Bailey et al., 2020). Furthermore, the results of these studies question the concept that males perform better and are fit for scientific and maths topics than females (Wrigley-Asante, Ackah & Frimpong, 2023). Orji et al. (2021) in their research on nursing students in South-South and South-East university, opined that gender has no influence on academic performance rather than mode of entry, religion, and marital status of the student is of more significant determinant than it. Gender and grades are sometimes linked together in some courses, especially those that are gender dominated.

George, et. al. (2020) study on the impact of gender on academic performance and industry relevance on private university students submitted that gender does not have a significant influence on student academic performance; rather, the personal attitude of the students towards academic excellence based on class of degree or qualifications is what paves the way for decent job employment. Though female graduate students record a high academic excellent, it does not guarantee exceptional performance in the labor market compared to her male counterparts. Gender may make significant contributions in learning readiness and its dimensions due to variation in the influences related to the existing social capitals among students. It is wrapped up that without gender equality, the enhancement of learning readiness is not possible. Maina and Umoru (2020) on 69 final year students of architecture on their design studio work from Ahmadu Bello University (ABU), Nigeria, affirmed that gender does not have a significant impact on design class but that male students apply a more balance approach to design than female making them at an advantage. He pointed out that morale and self-confidence are the factors that influenced their performance in their courses and have nothing to do with gender. The study recommended counselling for the female students to boost their morale.

Elshaer, Hasanein, and Sobaih (2024) opined that time management and punctuality have an impact on the academic performance of students regardless of their gender. Research work on selected male and female undergraduate students of Federal University of Technology, Akure, Nigeria also demonstrated this. Each gender has equal self-efficacy and active learning strategies, and this is subject to their interest during study and their level of activeness during the lectures. As such, the mastery experience of the teachers and their persuasion to the students helps to boost their morale or self-efficacy. (Sukidin et al., 2022). Khalid & Rauf (2023) extensive study on the different course work loads of UK

undergraduate university students, gender, and age found out that the workload of individual students' courses (English, math, and accounting) has a significant impact on their academic performance, while age and gender have a mixed impact on the student's academic performance (CGPA). The study also found that male students have higher scores in course workload (homework) than female students.

Methodology

This study used quantitative research approach to determine whether gender influences academic performance. A cross-sectional survey was conducted to obtain data from a broad sample of students at various levels in Caleb University's Architecture Department, Lagos, Nigeria. The emphasize was on evaluating academic achievement in selected courses and comparing it between male and female students. The study employed stratified random sampling to guarantee that the sample is representative of the population. The sample size was established using the total number of students in the department, ranging from 200 to 400 level within the appropriate confidence level. The population of the three levels was 350 students with 167 respondents duly filled and returned questionnaires and this accounted for 47.7% of the study population. The responses were gathered through online structured form with no personal interaction or undue pressure imposed on the respondents. They filled out a systematic questionnaire which meant to collect demographic information, study habits, learning surroundings, and attitudes towards education. The independent variable is gender (male or female), while the dependent variable is academic performance (as evaluated by GPA, specific subject grades, and standardized test scores). The data was analyzed using statistical software (SPSS). Descriptive statistics were used to summaries the data and describe the overall patterns in academic achievement by gender. The study lasted six months and consisted of three phases: sampling, data gathering, and analysis. The study followed ethical guidelines by getting informed consent from all participants, who were assured of the confidentiality and anonymity of their data.

Results and Discussions

The results of the study with the main objective of examining the influence of gender on academic performance of architecture students at the undergraduate level with specific objectives of

- i. identify the demographic characteristics of the respondents; and
- ii. assess the academic performance trend by gender.

Firstly, the demographic characteristics of the respondents were identified in figure 1 below.

Gender

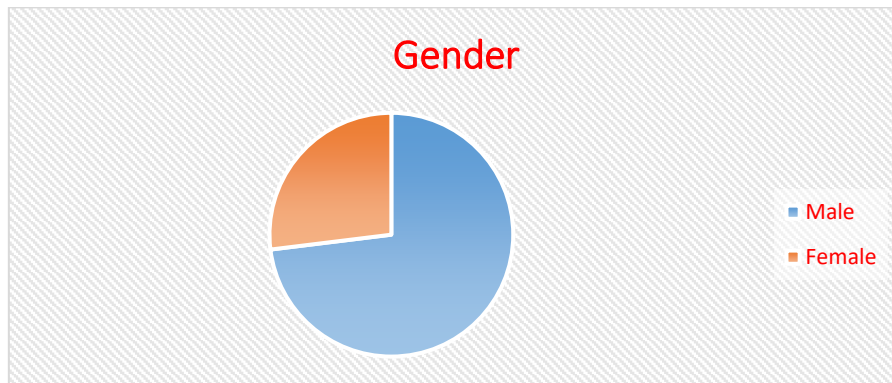


Figure 1: Demographic characteristics of the respondents

Figure 1 indicated a total number of male students being 122 as against the female 45 from a total of 167 responses. This agrees with the assertion of Mukoro (2014) that there is a lower degree of gender difference in the intake between male and female admission in the Architecture department as shown with the male at 73.1% and female at 26.9% respectively of the 167 respondents. The demographic characteristics indicated a ratio of approximately 3:1 in the intake of students to study architecture in the study area. The second objective assessed the relationship between gender and academic performance. This was considered from their studio work and Cumulative Grade Point Average (CGPA) and presented in figures 2 & 3 below.

Figures 2 shows that both male and female respondents have their highest CGPA at between 3.50 – 4.49 points (Second class upper - 2.1) but the female gender has more students at the distinction cadre (4.5 and above) compared to the male gender which have more students at the second class upper (2.1) cadre even though they still have close agreement between gender and academic performance. This outcome agrees with the study of Joseph & John (2015) that gender has a considerable effect on students' academic performances. Different factors could be attributed to higher score in studio grades among the female studio as above their male counterpart. This may include attention to details, graphical representation, presentation of ideas and creativity.

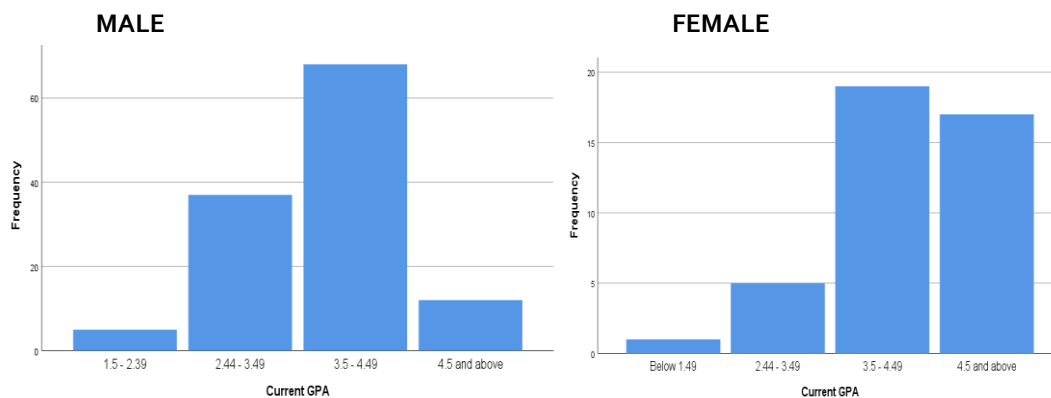


Figure 2: Academic performance trend by gender

Both charts in figure 2 above display the distribution of students based on their current GPA, but they have some differences in categories and frequency patterns.

Table 1: Key Similarities:

Category	Male Chart	Female Chart	Difference
Lowest GPA Range	1.5 - 2.39	Below 1.49	The female chart has a lower threshold for the lowest GPA range.
Mid-Level GPA Range	2.44 - 3.49	2.44 - 3.49	Similar in both charts, but with a lower frequency in the second chart.
Highest Frequency GPA Range	3.5 - 4.49	3.5 - 4.49	Both charts have the highest student concentration here.
4.5 & Above GPA Category	Fewer students in this range	More students in this range	The female chart suggests an increase in high-performing students.

Table 2: Key Differences:

Aspect	Male Chart	Female Chart
Lowest GPA Range	1.5 - 2.39	Below 1.49
Second Lowest GPA	2.44 - 3.49	2.44 - 3.49
Highest GPA Range	4.5 and above	4.5 and above
Frequency of 4.5+ GPA	Low (~15-20 students)	Higher than in the first chart
Overall Shape	More students in mid-range (2.44 - 3.49)	Fewer mid-range students, more at the top

The second (female) chart suggests a more polarized distribution, where students either perform exceptionally well (3.5 - 4.49 and above 4.5) or poorly (below 1.49), with fewer students in the middle. Meanwhile, the first chart (male) shows a more balanced distribution, with a significant number of students in the mid-range GPA category (2.44 - 3.49).

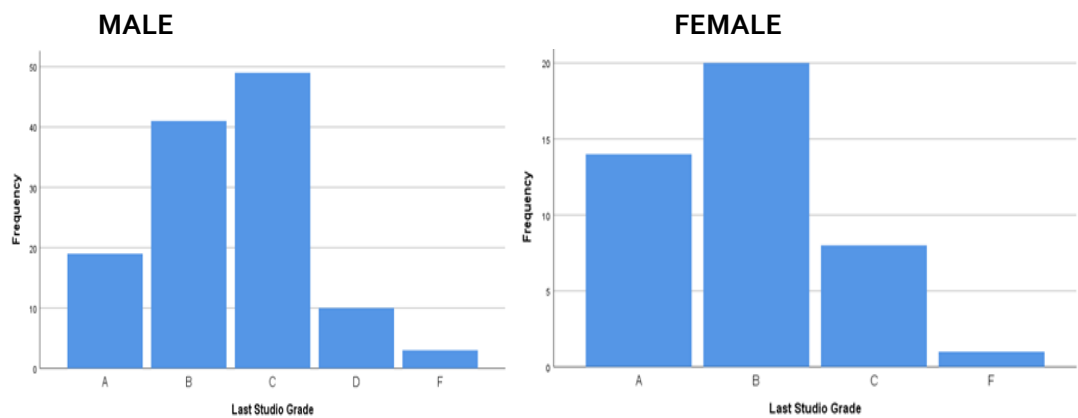


Figure 3: Last Studio Grades

Figure 3 bar chart, however suggested more female has As and Bs with less Fs. The bar of the C grades carries more male students while Bs have more of the female students. This shows that the female gender performed brilliantly in the studio design course which incidentally is the bedrock of Architectural study.

Table 3: Comparison between male and female studio Grade

Category	Male Studio Grade Chart	Female Studio Grade Chart	Comparison
Highest Grade Frequency	C Grade (~50 students)	B Grade (~20 students)	The male chart had most students at an average level (C), while the female had more above-average students (B).
Second Most Common Grade	B Grade (~40 students)	A Grade (~15 students)	In the male chart, B was common but lower than C, whereas in the female chart, A became more common, showing improvement.
Lowest Grade Frequency	F Grade (very few students, <5)	F Grade (very few students, <5)	Both charts show very few failing students.
Grade "A" Frequency	Moderate (~15-20 students)	Higher (~15 students, closer to B than C)	In both cases, grades A were fewer than B but more significant in the second chart.
Grade "C" Frequency	Highest (~50 students)	Lower (~10 students)	There was a major drop in C grades, meaning more students improved to B or A.
Grade "D" Presence	Present (low frequency, ~10 students)	Not present	D grades disappeared in the female chart, possibly meaning those students improved.
Overall Performance Trend	More students in mid-to-low performance (C dominant)	More students in higher performance (B and A dominant)	Overall improvement in academic performance.

Descriptive Statistics of figure 4 below, indicated female students having higher standard deviation with current CGPA of 4.21 as against male students 3.71. Variability in CGPA for female students stands at 0.842 and males, 0.698. The standard error indicates that the mean CGPA estimate is more precise for boys, 0.063 than for females, 0.130 most likely due to males' greater sample size.

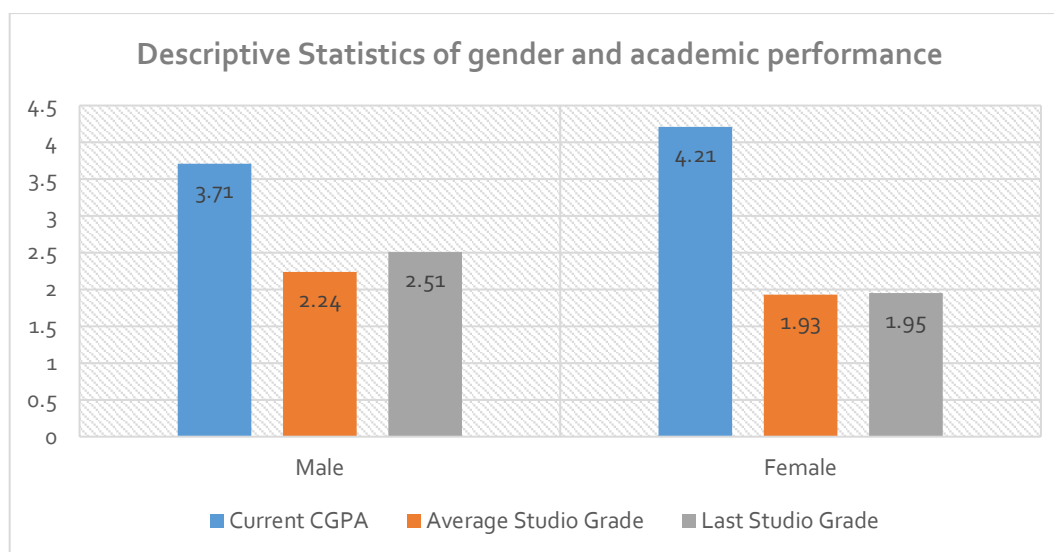


Figure 4: Mean descriptive Statistics of gender and academic performance

Also, female students are mostly neat and tends to present works that represent that feminine nature. Ability to convince their critics better could also be a factor above the male counterparts. The figures showed the first objective of identifying the performance trends among genders. Some studies demonstrate that girls and women perform better on creativity exams, while others show the opposite, and many show no significant difference (Crowther & Briant, 2022).

Conclusion and Recommendations

Contrary to the submission of Musa and Saliu (2016) on the analysis of gender performance in architectural education at the Ahmadu Bello University (ABU) Zaria from the 2011/2012 to 2014/2015 sessions that there with no significant difference in academic performance in architectural design studio work, the result of this study showed a huge difference. The chart reveals that female students have a higher current CGPA (4.21) compared to males (3.71), indicating stronger overall academic performance. However, male students outperform females in studio-related courses, as shown by their higher average studio grade (2.24 vs. 1.93) and last studio grade (2.51 vs. 1.95). This suggests that while females excel in theoretical coursework, they may struggle with practical studio projects, whereas males perform better in hands-on design tasks but have a lower CGPA. To address this, targeted support should be provided for female students in studio work through workshops, mentorship, and collaborative learning, while male students should be encouraged to enhance their performance in theoretical courses through study skills training and structured academic support. Integrating balanced teaching methods that connect theory with practical application can help both groups achieve more well-rounded academic success.

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