

Influence of School Based and Personal Factors on the Academic Performance of Architecture Undergraduates at Ahmadu Bello University, Kaduna State, Nigeria

David Ileza Adamu^{1*}, Joy Joshua Maina², Murtala Muhammad Salihu³
& Deborah Ladi La'ah⁴

^{1,2,3} Department of Architecture, Ahmadu Bello University, Zaria

⁴ Department of Educational Foundations and Curriculum, Ahmadu Bello University, Zaria

*Correspondence email: dalestic12@gmail.com

Abstract

Educators are becoming more involved in identifying the factors that influence student achievement. Many factors influence students' academic achievement, and the study of these factors has piqued the attention of the higher education community. Therefore, failure to understand these elements could stymie the educational system and increase failure rates. This study investigates personal or school-based factors that most influence academic performance for architecture undergraduate students Ahmadu Bello University. The analysis indicated that passion or interest for architecture (M 4.24), attending lectures (4.14), cost of materials for assignment (4.11) were the most influential variable that influence students' performance among the personal based variables. Among the school-based variables include quality of natural light in studio (3.92), quality of air in studio (3.74) and power supply (3.74) were the most influential. A paired samples T-test comparing scores of both categories of factors revealed a significant difference between mean values of the two groups, implying that personal factors (M 3.42) influence academic performance more than school-based factors (M3.17). Consequently, it is recommended that the Architecture students need to go through proper orientation, personal contact, encouragement and mentoring by all academic staff. The department also needs to liaise with the Guidance and Counselling unit to boost morale of students. Professionals in practice also have a role to play especially with the internet meetings, seminars, scholarships and study grant for students who might have difficulty with academic funding. Furthermore, it is also recommended that the studio be revitalised in order to encourage better academic performance. The result indicated that the personal and school-based factors had an overall mean value of 3.4151 and 3.170, respectively. However, the paired variables had a significant value of 0.00. Therefore, the study confirmed that there was a significant difference in the factors that influence students' academic performance.

Keywords: Academic performance, Architecture Undergraduates, Personal factors, School-based factors

Introduction

In This 21st century period of globalisation and technological revolution, students' academic performance is perceived to be of tremendous importance for the overall development of any nation (Duwal & Khonju, 2021). Students' academic performance in this context is the extent to which students achieve the desired

educational goals and objectives (Okoye et al., 2021), and it's one of the major factors considered by employers in hiring workers, especially for fresh graduates (Mohamed et al., 2018). According to Maina & Ibrahim, (2019) achievement or performance generally refers to attainment of set learning objectives, satisfaction with completing academic activities, acquisition of desired

skills and competencies as well as overall post college performance, usually measured along the Cumulative Grade Point Average, CGPA . Many factors influence students' academic achievement (Chinyoka & Naidu, 2013) and the study of this factors has piqued attention in the higher education community. Therefore, failure to understand these elements could stymie the educational system and increase failure rates (Duwal & Khonju, 2021). Importantly, it greatly influences the quality of graduates which eventually make up the work force.

Educators are becoming more involved in identifying the factors that influence student achievement because it affects the world of practice especially for professional disciplines such as architecture, engineering and construction. Maina and Ojobo, (2020) investigated predictors of academic success among architecture undergraduates at Kaduna State University as a qualifier for enrolment into Masters' degree programs and a prerequisite for registration for the Professional Competence Examination. The results reveal that the level, class experience and competence of lecturers, as well as the cost of equipment for assignments, significantly predict academic success. Additionally, a study on academic performance involving undergraduates at Ahmadu Bello University (ABU) compared responses of students from both ABU (Ahmadu Bello University) and University of Jos (Maina, Marafa & Daful, 2018). However, the comparison of school-based and personal-based factors that influence academic performance has rarely been studied despite the advantages to managers of academic programs within Higher Education (HE) and also students who are the prime beneficiaries of curricula. This study therefore compares school-based and personal factors that most influence architecture undergraduate students' performance at ABU, the oldest public university offering architecture in Nigeria. The study also evaluates if there is a significant difference between both factors order to ascertain the best approach towards enhancing a higher level of students' performance. Objectives of the study are to:

- i. Identify school-based and personal variables that most influence the academic performance;
 - ii. Evaluate if there is a significant difference between personal-based and the school-based factor that influence academic performance.
- Study hypothesis: School-based factors most influence academic performance of architecture undergraduate students.
- Research question:
- i. Which personal/school-based factors influence academic performance the most?
 - ii. Is there a significant difference between the personal-based factors and school-based factors in influencing academic performance of architecture undergraduates studying at Ahmadu Bello University?

Literature Review

I. *School-based Factors*

Several school-based factors have been proffered to influence academic performance in literature. Table 1 illustrates that school-based factors such as quality of lecturers, teaching, class, studio spaces, accommodation, library and security related variables influence academic performance.

According to Al-Agili et al., (2012), there is a direct link between the quality of a teacher's experience and the academic performance of the students. This, however, implies that the teaching-learning methods and strategies should be appropriate and encouraging to the students in order to boost their academic performance. Afolami et al., (2013), likewise deduce that teaching methods influence the academic performance in core architecture courses. In essence, the quality of academic staff has a huge impact on the quality of graduates' universities produce. Kapur (2018), highlighted that the quality of instruction provided by teachers influenced the students' interest in their subjects. Kapur also emphasized that a well-structured lesson would result in positive outcomes for the students. Ur rahim Shah & Afzal, (2021) further indicated that the teaching methods used by teachers determine the extent to

which students perform in their academics. Therefore, it is essential for a teacher to ensure that the teaching methods used are beneficial to the students (Kapur, 2018).

Resources have a strong positive relationship with academic performance. Educational amenities, such as clean drinking water, electricity, technology, textbooks, stationary, and other materials, are essential to enhance learning. At UiTM in Malaysia, Baharin et al., (2015), established a significant relationship between academic performance of students and university facilities notably the library and classrooms largely due to the proximity of these facilities to academic areas. Mersha et al., (2013) also established the negative influence of poor school environments notably teacher roles and off-campus facilities on female undergraduates in Ethiopia. Meanwhile, in respect of the environment, two studies reported that an uncondusive classroom environment and school location resulted in the students' poor performance in their subject (Igberadja, 2015). The importance of amenities such as laboratories, libraries, and a stable internet connection has been emphasized during science instruction because students understand and remember more when they are made to feel rather than simply listening (Toplis, 2012). Maina and Aji (2017) established that for architecture undergraduates, living on and off influenced the class of degree of students. The study revealed that students who live on-campus would on average, graduate with a second-class lower degree compared to students who reside off-campus, who would on average, graduate with a third-class degree. Level of entry and lecturer competence were found to significantly predict academic

performance of architecture undergraduates at Kano University of Science and Technology as well as at Kaduna State University (Maina et al., 2020; Maina & Ojobo, 2020). This implies that students who gain entry following a diploma certificate (Direct Entry) and who are taught by highly competent lecturers are likely to outperform their peers who gain entry through the Traditional Unified Tertiary Matriculation Examination (UTME) or the Joint Admissions and Matriculation Board (JAMB) examination. Conducive learning environments notably good classrooms, hostel accommodation, power supply and security were also revealed to influence academic performance of architecture undergraduates (ibid).

II. Personal-based factors that influence academic performance

Several personal factors have been proffered to influence academic performance in literature. These are summarised in Table 2. According to Opoko et al., (2016), personal factors influencing academic achievement include parents' qualifications, lifestyle, occupation, and income, students' gender, age, ethnicity, prior educational qualification, city of residence, and also counselling prior to admission. Gender differences were found to influence academic performances of university students. Thiele et al., (2016) in a study of British graduates, established that males enter university with lower grades than females and were also less likely to achieve a high grade. Females were also found to have better performance for a core architectural course (Opoko et al., 2016).

Table 1 Summary of school-based factors that influence the academic performance

Variables	Source(s)
Learning environment, School facilities (furniture, conveniences, cleanliness, indoor scaping, security, internet, water/electricity supply, worship facilities,shops)	Igberadja, (2015); Toplis, (2012); Mersha et al., (2013); Igberadja, (2015)
Lecturer competence/experience	Al-Agili et al.,(2012); Kapur, (2018); Ur rahim Shah & Afzal, (2021); Afolami et al., (2013)
Accommodation/quality of hostels	Maina & Aji, (2017)
IEQ (Lighting, Air, Acoustics)	Dayioğlu & Türüt-Aşik, (2007); Baharin et al., (2015)

Table 2 Summary of personal-based factors that influence the academic performance

Variables	Source(s)
Parents' Educational attainment	Akben-Selcuk & Altiok-Yilmaz, (2014); Mallett, (2016), Boi,(2020), Considine & Zappalà, (2002), Ali et al., (2013), Watt, (2010)
Age	Ali et al., (2013); Hanafi & Noor, (2016), Opoko et al., (2016)
Counselling	Opoko et al., (2016),
Level/Class	Opoko et al., (2016),
Previous Academic results (O'Levels)	Opoko et al., (2016)
Gender	Thiele et al., (2016)
Motivation	Duwal & Khonju, (2021)
Time management	Duwal & Khonju, (2021)
Class attendance	Duwal & Khonju, (2021)
Relationship with peers/colleagues	Maina & Ibrahim, (2019); Kudari, (2016)
Location (urban/rural setting)	Opoko et al., (2016)

A student's individual personality and attitude towards learning plays a huge role in their academic performance. According to Duwal & Khonju, (2021) students' class attendance and engagement plays an important part in contemporary higher education. The class attendance is used to check the daily commitment of students towards class activities. Kudari, (2016) also emphasized that forming a social circle and friendships have a positive effect on the academic outcomes of students.

According to Considine & Zappalà, (2002), there is a correlation between parents' or guardians' financial capacity and the academic performance of students. Considine & Zappalà, (2002) noted that parents or guardians who have social, educational and economic advantage strengthen the level of their child's success in future. According to Ali et al., (2013), father/guardian's economic status and daily

hours of study by students significantly contributes to the academic performance of graduate students. Watt, (2010) compared families of low- and high-income earners and indicated that parents who are consistent average and high-income earners cleave to similar views and visions as compared to families earning smaller wages and their views about educational achievements. Due to a lack of financial resources, these low-income families are unable to fund their children's education, resulting in poor academic performance (Mauka, 2015). When students are provided with the necessary tools and equipment, they tend to have a better understanding of academic concepts (Kapur, 2018). Similarly, students with good academic performance have better learning techniques, home-related aspects, study habits, and physical resources (Mohamed et al., 2018).The educational qualifications of the parents are also regarded as one of the

important aspects that are used to evaluate the academic learning of students. Akben-Selcuk & Altio-k-Yilmaz, (2014) also concluded that the grade points of students from literate parents exceed those from illiterate parents on a standardized exam. This is because literate parents can share information with their children concerning school (Mallett, 2016). Boi,(2020) further asserted that a higher level of performance-associated conduct by mothers in the house has an impact on the performance of their children.

Maina et al. (2018) evaluated factors influencing the academic performance of architecture undergraduates at Ahmadu Bello University and the University of Jos and recommended that studios and classrooms for architecture studios be designed to a standard considering natural light and ventilation. The study also emphasized on the quality of lecturers employed, which was ranked highly in the analysis.

In accessing the academic success predictors for architecture students at Kano University of Science and Technology, wudil, Kano State (Maina et al., 2020), it was concluded that the mode of entry and personal time management were significant predictors of academic success among the personal-based variables. While school-related variables include learning environments, specifically good classrooms, accommodation, external lighting, power supply, worship places, and general cleanliness.

In a similar study by Maina & Ojobo, (2020), which predicts the academic success of architecture undergraduates at Kaduna State University using logistic regression analysis, three variables significantly predict students' success. These are the level/class of the students, the quality of the lecturers' experience or competence, and the cost of materials for assignments.

Methodology

A quantitative approach was employed using questionnaires in order to

systematically evaluate the aforementioned variables that influence academic performance for architecture. Data was sourced from undergraduate students of Ahmadu Bello University in the 2020/21 academic session on variables related to demographic, school-based, and personal attributes. The following steps were employed for the analysis:

1. Using SPSS, all data was analyzed for descriptive statistics (frequency (N) and percentages (%), as well as means (M) and standard deviations (SD). Respondents were requested to rate 51 variables presented in Table 3 on 5-point Likert scales. In order to determine which school-based and personal factors most influence academic performance, mean values greater than or equal to 3.5 were considered important variables influencing academic performance in this study in response to the first objective of the study. SDs less than 1 denote clustering around the mean value of a variable.
2. To address the second objective, data for both school-based and personal factors were subjected to tests of normality which revealed to be normally distributed. A paired sample T-test was used to assess differences between personal and school-based variables from respondent ratings of the 51 variables split into the two groups (school-based and personal factors). T-tests ascertain if significant differences exist between scores from a single source based in two categories or groups. Results from these procedures are presented in the next section.

Result and Discussion

Results from the first section of the questionnaire regarding demographic data are presented in Table 3. Of the total student population of 410 in the 2017–2018 academic session, 290 questionnaires were distributed and 271 retrieved. Females account for 24.7% of the sample, while male samples account for 69.7%. 61.3% of respondents are aged between 18 and 25 years. Also, the highest number of respondents were 300-level students, with a

32.8% value, which was slightly above the 100-level students, who summed up to 32.1%.

A descriptive statistic of variables that influence academic performance was analyzed in order to determine which school-based and personal factors most influence academic performance. The list of

variables was arranged based on the hierarchical level of relevance, using their mean value. Table 3 below indicates all the variables that affect academic from review literature. The table illustrates that 18 of the 51 variables were regarded as significant having mean values above 3.5.

Table 2: Demographic profile of respondents

<i>Variable</i>	<i>Frequency</i>	<i>Percent (%)</i>
Gender		
Male	189	69.7%
Female	67	24.7%
Missing	15	5.5%
Total	271	100.0%
Age on admission		
<18	84	31.0%
18-25	166	61.3%
26-35	12	4.4%
Missing	9	3.3%
Total	271	100.0%
Level		
100L	88	32.5%
200L	68	25.1%
300L	89	32.8%
400L	26	9.6%
Total	271	100.0%

Table 3: Descriptive statistics of variables that influence academic performance

<i>Variable</i>	<i>Categories</i>	<i>N</i>	<i>M</i>	<i>SD</i>
Passion/Interest for architecture	Personal -based factor	268	4.24	0.896
Attending lectures	Personal -based factor	270	4.14	0.903
Cost of materials for assignments	Personal -based factor	266	4.11	0.938
Quality of natural light in studios	School-based factor	268	3.92	0.964
Quality of Secondary School education	Personal -based factor	265	3.92	0.946
Quality of Primary School education	Personal -based factor	266	3.85	0.928
Relationship with other students	Personal -based factor	268	3.81	0.906
Quality of air in studios	School-based factor	269	3.74	0.915
Power supply	School-based factor	269	3.74	0.93
Father's occupation	Personal -based factor	260	3.73	1.06
Quality of lecturers' experience	School-based factor	267	3.72	0.837
Father's educational qualification	Personal -based factor	270	3.71	1.109
Collaboration with colleagues	Personal -based factor	266	3.69	0.946
Quality of natural light in classrooms	Personal -based factor	265	3.68	0.937
Resuming early after holidays	Personal -based factor	268	3.64	1.105
General state of cleanliness	School-based factor	265	3.57	0.939
Entry qualification	Personal -based factor	260	3.53	0.867
Quality of air in classrooms	School-based factor	267	3.51	0.89
Gender	Personal -based factor	238	3.46	1.168
Overall quality of studios	School-based factor	269	3.41	0.836

Parents'/guardians' income	Personal -based factor	265	3.4	0.961
Departmental environs/landscaping	School-based factor	265	3.37	0.834
Campus environment	School-based factor	262	3.35	0.917
Availability of worship facilities	School-based factor	266	3.35	1.18
City of Residence	Personal -based factor	257	3.31	0.97
External lighting	Personal -based factor	262	3.28	0.976
Level of study	Personal -based factor	262	3.28	1.003
Security	School-based factor	268	3.25	1.155
Acoustic quality in classrooms	School-based factor	263	3.24	0.924
Mother's educational qualification	Personal -based factor	269	3.24	1.039
Availability of adequate funds	Personal -based factor	266	3.24	1.047
Interactive sessions in class	School-based factor	267	3.21	0.948
Quality of library facilities	School-based factor	265	3.17	0.886
Mother's occupation	Personal -based factor	267	3.17	1.075
Personal time management	Personal -based factor	270	3.16	0.993
Water supply	School-based factor	267	3.1	1.074
Ethnicity	Personal -based factor	253	3.1	1.143
Quality of furniture	School-based factor	267	3.04	0.86
Age on admission	Personal -based factor	255	3.01	0.986
Information about architecture program at registration/induction	School-based factor	258	2.82	1.009
Availability/quality of shopping facilities	School-based factor	262	2.82	0.933
Source of counselling	School-based factor	252	2.75	1.299
Quality of workshops	School-based factor	260	2.73	1.011
Indoor scaping	School-based factor	258	2.73	0.951
Relationship with academic Staff	Personal -based factor	269	2.64	1.029
Counselling before admission	Personal -based factor	261	2.64	1.196
Relationship with non-academic staff	Personal -based factor	265	2.52	1.111
Availability/quality of cafeterias	School-based factor	267	2.52	1.045
Quality of toilet/sanitary facilities	School-based factor	267	2.45	1.051
Internet Connectivity	School-based factor	266	2.39	1.294
Availability and quality of hostels/accommodation	School-based factor	267	2.09	1.17

The variables were further subdivided into personal and school-based factors in order to indicate the set of variables that best influence academic performance.

The analysis indicated in table 3 also reveals that personal-based factors such as attending lectures, the cost of materials for assignments, and collaboration with colleagues are common factors that influence academic performance across various studies. The above variables were revealed by descriptive statistics by Maina et al. (2018) in accessing Student Perception on Factors that Influence Academic Performance and also studies by Maina & Ojobo, (2020) and Maina et al., (2020) on factors that predict academic performance. The above descriptive statistics (table 3) also reveal that school-based variables such as quality of natural light and lecturers'

experience are also common factors that influence and predict academic performance based on descriptive statistics.

From the personal-based factors as indicated in table 3, passion for or interest in architecture was revealed to be the highest variable for predicting academic performance. It had a mean value of 4.24, which was the highest overall variable. It was followed by lecture attendance and the cost of materials for the assignment, with a 4.14 and 4.11 mean value, respectively. Other significant variables include quality of secondary school education, quality of primary school education, relationship with students, fathers' occupation, fathers' educational qualification, collaboration with colleagues, resuming early after holidays, and entry qualification.

Table 4: Personal based factors that influence academic performance

<i>Variable</i>	<i>N</i>	<i>M</i>	<i>SD</i>
Passion/Interest for architecture	268	4.24	0.896
Attending lectures	270	4.14	0.903
Cost of materials for assignments	266	4.11	0.938
Quality of Secondary School education	265	3.92	0.946
Quality of Primary School education	266	3.85	0.928
Relationship with other students	268	3.81	0.906
Father's occupation	260	3.73	1.06
Father's educational qualification	270	3.71	1.109
Collaboration with colleagues	266	3.69	0.946
Resuming early after holidays	268	3.64	1.105
Entry qualification	260	3.53	0.867

Among the school-based influences on academic performance, the quality of natural light in studios was revealed to be the most important variable for predicting academic performance for architecture students. It had a mean value of 3.92. It was followed by the "quality of air in studios and power supply," which had a 3.74 mean value, respectively. Other significant variables include the quality of the lecturer's experience, the quality of natural light in classrooms, the general state of cleanliness, and the quality of air in classrooms. The aforementioned variables each had a mean value of between 3.51 and 3.72.

The above analysis on table 5 indicated that the personal-based factors, which have an overall mean value of 3.85, are a stronger influence on academic performance compared to the school-based factors, which have an overall mean value of 3.70. A test of normality using SPSS was conducted to determine if the variables were normally distributed. The analysis indicated that the variables of both the school-based factors and the personal-based factors were not

significantly different from normal distributions ($p=0.597$ and 0.216 respectively). A Paired-sample T test was used to determine if there was a significant difference between the personal and school-based variables.

A paired sample statistics indicates that the overall mean value of the personal based factor is 3.415 while that of the school-based factor is 3.170 with a paired difference value of 0.24496. The standard deviation of the variable was also 0.03150. However, with a p value of 0.000 as indicated in Table 8, it was confirmed that there was a significant difference between the personal and the school-based factors that influence the academic performance of architecture students. The study hypothesis that school-based factors influence academic performance of architecture undergraduates at ABU can therefore not be supported and concludes that personal factors influence students more than school-based ones.

Table 5: School-based factors that influence academic performance

<i>Variable</i>	<i>N</i>	<i>M</i>	<i>SD</i>
Quality of natural light in studios	268	3.92	0.964
Quality of air in studios	269	3.74	0.915
Power supply	269	3.74	0.93
Quality of lecturers' experience	267	3.72	0.837
Quality of natural light in classrooms	265	3.68	0.937
General state of cleanliness	265	3.57	0.939
Quality of air in classrooms	267	3.51	0.89

Table 6: Indicating a Paired sample analysis

Paired Samples Statistics					
			Mean	N	Std. Deviation
Pair 1	Personal Factors	3.4151	271	0.45976	0.02793
	School-based Factors	3.1701	271	0.52130	0.03167

Table 7: Indicating a paired sample analysis

Paired Samples Test									
Pair	Personal-based Factor	Paired Differences		Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
		Mean	Std. Deviation		Lower	Upper			
1	School-based Factor	0.24496	0.51856	0.03150	0.18294	0.30698	7.776	270	0.000

Discussions

Firstly, the study investigated the school-based and personal-based factors that most influence academic performance. It was indicated that passion/interest for architecture, which had a mean value of 4.24, was the most influential factor that affected the academic performance of undergraduate architecture students at ABU. It was also confirmed that the personal-based factors, which had a mean value of 3.42, had a stronger influence on academic performance compared to the school-based factors, which had a mean value of 3.17 as indicated in table 6. The highest personal-based variables, which include passion for or interest in architecture and lecture attendance, confirms Duwal & Khonju's (2021) statement that personality and attitude towards learning play a huge role in their academic performance. Other school-based variables like the quality of natural light in studios, the quality of air in studios, and power supply also had a significant influence on academic performance within the school. This contrasts with findings by Opoko,

Oluwatayo & Ezema (2016) which revealed the dwindling focus on Design Studio in private universities, partly owing to the advent of digital technology which enables students to produce most drawings on their personal computers rather than hand drafting as is the traditional practice in the architecture curriculum. This also confirms Igberadja's (2015) findings in respect of the environment, which indicate that an unconducive environment and school location may influence the students' performance.

Secondly, through a paired sample T-test, the study investigated whether there is a significant difference between the influences of school-based and personal factors on academic performance. It concluded, however, that there is a significant difference between the personal factors and the school-based factors affecting academic performance. However, the study rejects the hypothesis that School-based factors most influence academic performance of architecture undergraduate students in Ahmadu Bello University.

Conclusion and Recommendation

This study set out to investigate factors that affect the academic performance of architecture students at ABU. The result of the study indicates that personal-based factors such as passion or interest for architecture, attendance at lectures, and the cost of materials are vital in affecting the academic performance of architecture. Consequently, it is recommended that students go through counselling and course orientation in order to evaluate their level of interest in architecture before engaging in the course content. Ahmadu Bello University School of Architecture needs to focus on personal contact, encouragement, and mentoring of its undergraduate students by all academic staff. The department also needs to liaise with the guidance and counselling unit to boost the morale of students. Students also need to be encouraged to set up peer mentoring groups and similar projects. Professionals in practise also have a role to play, especially with internet meetings and seminars. Also, scholarships and study grants are recommended for students who might have difficulty with academic funding. The school-based factors that were indicated to be the most influential include the quality of natural light in the studio, the quality of air in the studio, and power supply. Therefore, it is recommended that the studio be revitalized in order to encourage better academic performance.

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