Humanika, Kajian Ilmiah Mata Kuliah Umum, ISSN: 1412-1271 (p); 2579-4248 (e).
Vol. 25. No. 1. (2025). pp. 1-10 doi: 10.21831/hum.v25i1.77301. 1-10

Effect of teachers' variables on students' academic achievement in entrepreneurship education in technical and vocational colleges in Lagos State, Nigeria

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Abstract

Education is fundamental for societal development, with technical and vocational training crucial in equipping individuals with essential skills. This research assesses the effects of teachers' variables—specifically sex and certification level—on students' academic achievement in entrepreneurship education within technical and vocational colleges in Lagos, Nigeria. Utilising an ex-post facto design, the study analysed entrepreneurship results from 85 final-year students across two colleges, focusing on data from the 2013/2014 academic session, with the study population being 223 students. The study sample was 85 final-year students from vocational and technical colleges in Ikotun and Ikorodu. The collected data was analysed using the mean for the research questions and ANOVA to test the hypotheses. The findings indicated that students taught by female teachers scored significantly higher than those taught by male teachers, suggesting that female educators may create more effective learning environments. Conversely, no significant difference was found in the academic performance of students taught by teachers with Master's degrees compared to those with Bachelor's degrees, indicating that certification level may not be a critical factor in teaching effectiveness for this subject. In conclusion, the research underscores the importance of teacher characteristics in influencing student outcomes, advocating for hiring more female teachers in entrepreneurship education. This study contributes to the discourse on educational

quality in Nigeria by highlighting the need for tailored teacher training programs and policies to enhance academic achievement in technical and vocational education, thereby supporting national development goals.

Abstrak

Pendidikan adalah hal mendasar bagi pembangunan masyarakat, dengan pelatihan teknis dan kejuruan yang krusial dalam membekali individu dengan keterampilan esensial. Penelitian ini mengkaji dampak variabel guru—khususnya jenis kelamin dan tingkat sertifikasi—terhadap prestasi akademik mahasiswa dalam pendidikan kewirausahaan di perguruan tinggi teknik dan kejuruan di Lagos, Nigeria. Dengan menggunakan desain ex-post facto, penelitian ini menganalisis hasil kewirausahaan dari 85 mahasiswa tahun akhir di dua perguruan tinggi, dengan fokus pada data dari sesi akademik 2013/2014, dengan populasi penelitian sebanyak 223 mahasiswa. Sampel penelitian adalah 85 mahasiswa tahun akhir dari perguruan tinggi kejuruan dan teknik di Ikotun dan Ikorodu. Data yang terkumpul dianalisis menggunakan mean untuk pertanyaan penelitian dan ANOVA untuk menguji hipotesis. Temuan menunjukkan bahwa mahasiswa yang diajar oleh guru perempuan mendapat skor yang jauh lebih tinggi daripada yang diajar oleh guru laki-laki, yang menunjukkan bahwa pendidik perempuan dapat menciptakan lingkungan belajar yang lebih efektif. Sebaliknya, tidak ditemukan perbedaan signifikan dalam prestasi akademik siswa yang diajar oleh guru bergelar Magister dibandingkan dengan mereka yang bergelar Sarjana, yang menunjukkan bahwa tingkat sertifikasi mungkin bukan merupakan faktor penting dalam efektivitas pengajaran untuk mata pelajaran ini. Sebagai kesimpulan, penelitian ini menggarisbawahi pentingnya karakteristik guru dalam memengaruhi hasil belajar siswa, yang menganjurkan untuk mempekerjakan lebih banyak guru perempuan dalam pendidikan kewirausahaan. Studi ini berkontribusi pada wacana tentang kualitas pendidikan di Nigeria dengan menyoroti perlunya program dan kebijakan pelatihan guru yang disesuaikan untuk meningkatkan prestasi akademik dalam pendidikan teknik dan kejuruan, sehingga mendukung tujuan pembangunan nasional.

Keywords: Technical Education, Academic Achievement, Teacher Characteristics, Entrepreneurship Education, Vocational Training

Introduction

Education is a means to develop abilities and other forms of behaviour that are of positive value to society. Given this, one can submit that education gives people the power to reflect, make better choices, seek a voice in society, enjoy a better life, break the shackles of poverty and develop better self-esteem (Osokoya, 2010). Therefore, education could be understood to mean the total development of the individual child, through acceptable methods and techniques, according to his abilities and interests, as well as the needs of society, to take his rightful place and contribute adequately to the advancement of his society (Federal Republic of Nigeria, 2014). Technical and Vocational training is the pillar of all-round development, serving as the rudiment for literacy, skills acquisition, technological improvement and the capacity to control the natural resources of the state. The technical and vocational colleges' procedure as adopted by the Federal Ministry of Education in Nigeria is structured on objectives through which economic challenges can be perfected. The accomplishment of this rests on the usefulness of its teachers' quality implementation approaches. Education is described as an unavoidable device for augmenting economic progress and ensuring nation building (Ogungbemi, 2012). Technical and vocational colleges is the pillar of all round development, serving as the embryo for entrepreneurship education, skills acquisition, technological improvement and the capacity to control the natural resources of the state.

There was a time in Nigerian education history when importance was attached to volumes of books a student could read, with insignificant attention to the competence to engage the hand (vocational education). This may have made Fafunwa describe the British education system inherited by its colonies, which Nigeria is inclusive of, as too bookish (Fafunwa, 2018). It was an arrangement that displaced pre-colonial Indigenous education, which made individuals to be self-dependent. Since a nation's education sector is the taproot from

which other spheres of the economy can stem, A microscopic glance at the Nigerian environment reveals that some meaningful changes have occurred within the last five decades in all facets of its life, especially education. This is conspicuously available in the National Policy on Education document, which describes education as the instrument of excellence for engendering national development (Lawal, 2013). Awareness of this informs the necessity to commence reforms targeted at the country's general development and making the education sector a pillar (Adamu, 2013). These transformations came with policies serving as guidelines for education and academic achievement. The national policy on education, being a significant outcome of the reforms, according to Imam (2012), has also sailed through colonial and post-colonial stages, and its structures have not fully attained uniformity. As prominent education sub-sectors spelt out by the education transformations as an economic improver and indicator of change for nation building, technical and vocational colleges have also beckoned for considerable attention in Nigeria. Today, the operation of technical and vocational colleges is facing relentless and rapid change worldwide. The belief is that nothing is permanent except change. It is thus being redefined to serve many purposes: entrepreneurship education and skills development. Another dimension to the justification for this issue of change in the manner in which technical and vocational colleges work in Nigeria (Adesemowo, 2015) has rightly noted that the world has moved to the era of the knowledge economy and entrepreneurship education, which are critical in most developed and developing economies that are currently experiencing germane transformations and period of fast development.

Men are the vibrant wealth accumulators, natural resources users, and socio-economic, political and nation builders. Technical and vocational colleges were incorporated into the Nigerian education system because of the need to produce a resourceful and skilled workforce and the discovery of inalienable roles of the workforce in the growth of a country's economy. Gabadeen and Raimi (2012) established inadequate technical entrepreneurship education that possessed relevant skills as a hindrance to successful industrial growth in Nigeria. It is incontestable that technical and vocational colleges are concerned with making a technology-compliant workforce that is creative and skilful at transforming the country in all spheres, especially in technology within and without formal education settings. Technical and Vocational colleges are institutions meant to develop students with practical skills in different career fields, which will help them become self-reliant to themselves and the nation (UNESCO, 2022). Technical and vocational programmes in Nigeria are offered at the pre-vocational and vocational schools at the secondary school level, technical colleges, polytechnics, technical education colleges, and universities at the postsecondary school level..

Technical and vocational colleges have been seen as the type of institution that develops its trainees with the necessary skills and knowledge to transform theoretical science into goods and services for the benefit of humanity (Raji, 2016). Sallah (2015) viewed technical and vocational colleges as important entities that enhance the environmental resources for a nation's social and economic development. Technical and vocational education aims to provide skilled labour at sub-professional levels in applied sciences, technology, and commerce while inspiring students to strive for self-improvement and excellence (Federal Republic of Nigeria, NPE 2014). Academic achievement is used in the school to evaluate students' success in learning and examination, in which student academic achievement can be determined by test and examination scores or marks assigned by the designated teacher (Adediwura, 2017). Lydiah and Nasongo (2019) stated that students' performance in any academic programme has always interested education stakeholders. According to Ali (2013), academic achievement measures the degree of success in a specific student's study area. According to Kopershoek et al. (2019), analyzing technical and vocational colleges' academic achievement can provide insight into how technical and vocational colleges' academic achievement is performed, engaged, and evaluated within the educational system. Al-Abyadh and Abdel Azeem (2022) revealed that students' perceptions regarding their aptitude, the effort required, goal-setting, and the task difficulty significantly influence overall academic achievement in technical and vocational colleges.

According to Stump et al. (2014), 'increasingly, the self and self-beliefs are being viewed as crucial indicators of academic achievement'. It is generally documented that giving someone a goal to strive for, rather than just telling them to try their best, increases performance, most likely because it reduces uncertainty about what

is expected. Goal-setting is a well-known motivating strategy in the commercial world. However, it has been proposed that it is equally helpful in the educational arena, as creating objectives for educational reasons improves performance (Harackiewicz et al., 2002). Goal-setting must take into account a variety of aspects in order to be an effective motivator and performance enhancer. For example, the objective should be clear and defined and within the individual's capacity. Harkins (2001), therefore, supports the idea that normative knowledge can improve performance. The question is how normative information from unknown persons may affect motivation and academic achievement. Normative data suggesting poor task performance in others may cause an individual to self-evaluate their prospective performance. Sa'adiah et al. (2021) define learning outcomes as students' abilities after undergoing their own learning experience. Bloom states in Noorn et al.(2020) that learning outcomes may be classified into three categories based on the results obtained, namely, learning results in terms of domains: cognitive, emotional, and psychomotor, all of which must be closely monitored. The Federal Republic of Nigeria announces the announcement of professional development training at the completion of post-basic education (Lelei, 2019; Nwokeocha, 2018). Biseth et al. (2021) stated that the rate of educational transformation in technical and vocational education is still very low. Technical and vocational education in Nigeria has yet to bring out the best in students, particularly in vocational skills so that they can be self-employed and thus self-reliant. The Nigerian technical and vocational education students are not technically exposed to technology, which can make them function effectively in practical workshops on their own despite the introduction of the new curriculum. The education stakeholders (teachers, principals of technical and vocational colleges, educational managers, educational planners and policymakers) are greatly concerned about poor academic achievement. This concern cuts across all levels of the education system. The academic outcome of students in Nigeria has been. It is still of great concern to educators, the government, and parents because of the importance of education to the nation's growth and development. Parents and the government agree that the massive investment in education is not yielding the desired result. Poor academic achievement has been observed in school subjects, especially mathematics and entrepreneurship Education among technical and vocational school students (Adesemowo, 2015). This profoundly affects the workforce in all sectors of the economy. Teachers are celebrated and rewarded for high school and subject area ratings, emphasising the importance of recognising and rewarding teachers who produce better results.

According to Shabir (2015), teachers are one of the main factors in the strategic education system and play many roles in the broader education process. Teachers are enthusiastic about the topic and like sharing what they have learnt. They seem able to talk about their specialisation for hours while denying that they are experts. Good teachers will tell you they are students rather than teachers (Waldron, 2019). A teacher's two most important and defining characteristics are a love of information and a desire to help others grow. A teacher, often known as a school teacher, educates children and students. In many countries, those who want to be teachers must first receive specific professional qualifications or credentials from a university or institution. Nigeria's National Policy on Education (NPE 2014) acknowledges that the quality of education and its outputs cannot exceed the quality of teachers. Teachers are often regarded as the most valuable resource in the education industry. For example, the Australian Association of Education highlighted the importance of teachers' commitment to their schools, students, educational activities, professional colleagues, and society (Karluki et al., 2014). Teachers must not only use practical approaches but also be compassionate and thoughtful. This is also in line with Suriansyah (2015) that one of the efforts to improve the quality of education is through teachers because teachers are the primary key to improving the quality of learning outcomes, which in turn will improve the quality of education as a whole. According to Kain (2015), there has never been a consensus on the specific teacher factors that influence students' academic outcomes. Different scholars have studied the effect of teacher components such as sex, educational certification and years of service on students' academic outcomes. Akiri and Ugborugbo (2018) found that there was a significant relationship between teachers' sex and students' academic achievement. Carey (2019) found that teachers' years of service and educational qualifications were the prime predictors of students' academic achievement. However, Gale and Parker (2017) found that teachers' years of service and educational qualifications were not significantly related to students' achievement. Etsy's (2015) study in Ghana found that the teacher factors significantly contributed to low academic achievement, including lateness to school, absenteeism,

and inability to complete daily school tasks.

Isuku and Olaowoyin (2019) explained that teachers' factors are related to technical school students' academic achievement. The study provided empirical evidence of rampant poor teacher quality in the country, which led to low academic achievement among students. Several studies have revealed that various factors related to the teachers' variables, such as their certification, age, years of service, and sex, affect the academic achievement of students in vocational courses of which entrepreneurship education is a part; entrepreneurship course is a general course in the programme of technical and vocational Education which is a core course. Vocational Education students must pass as a requirement for graduation. Therefore, the study aims to assess the effects of teachers' variables on students' academic achievement in technical and vocational programmes. This prompted the focus on the effects of teacher's sex and certification on students' academic achievement in entrepreneurship education. Teaching and academic achievement greatly depend on the teachers' knowledge of the course content and ability to adequately or effectively deliver the instruction to the students. Researchers have stated that the quality of many teachers can positively or negatively affect subject delivery. Pramono and Purwanto (2020) stated that the low quality of teachers will affect the competitiveness and quality of students, and the variables that can positively or negatively affect academic achievement include teachers' certification, years of service, and sex. The study aims to determine whether there is a relationship between teachers' characteristics (sex and certification level) and students' academic performance in entrepreneurship education. The study will also compare the academic performance of students taught by male and female teachers, as well as students taught by teachers with different certification levels. Thus, the specific purposes of the study are to;

1. Examine the effects of teachers' sex on students' academic achievement in entrepreneurship education in technical and vocational colleges.
2. Examine the effect of teachers' certification on students' academic achievement in entrepreneurship education in technical and vocational colleges.
3. Examine the academic achievement of students who were taught entrepreneurship education by a male and female teacher.
4. Examine the academic achievement of students who were taught entrepreneurship education by the teacher with an M.Sc degree and bachelor's degree.

Research Questions

1. Does teachers' sex influence students' academic performance in entrepreneurship education in technical and vocational colleges?
2. Does teachers' certification level impact students' academic performance in entrepreneurship education in technical and vocational colleges?

Research Hypotheses

1. There is no significant difference in the academic performance of students taught entrepreneurship education by male and female teachers.
2. There is no significant difference in the academic performance of students taught entrepreneurship education by teachers with Master's degrees and Bachelor's degrees.

Methodology

The ex-post facto research design was used in this study. This design was appropriate because no variable was manipulated in this study. The study was limited to the entrepreneurship education course of the Vocational and Technical Colleges in both Ikotun and Ikorodu, Lagos. The entrepreneurship results from the 2011/2012-2013/2014 session were used. Also, the study was limited to final-year regular students in the two schools. The

population of this study was 223 students who registered entrepreneurship from 2011/2012 to 2013/2014 academic session. Due to the students' grades available at the time of the request, a purposive sampling technique was used to select students' grades for two sessions. The sessions each were selected based on the teachers' sex and certifications. However, 2013/2014 session results were used as a sample of the study. Therefore, the sample of the study was 85 final-year students from vocational and technical colleges in Ikotun and Ikorodu. No instrument was developed in this study. Rather, the researchers wrote a letter to the principal of Vocational and Technical College, Ikotun to request data which was the entrepreneurship results for the selected sessions. Data were collected by the researchers from the school office and the mean was used to analyse the data for the research questions, while analysis of variance (ANOVA) was used to test the hypotheses.

Results and Discussion

Research Question 1: Does teachers' sex influence students' academic performance in entrepreneurship education in technical and vocational colleges?

Table 1

The mean scores of students taught entrepreneurship by male and female teachers

Teachers' Sex	Numbers of Students	Mean Score	Remark
Male teacher	8	54.86	Average outcome
Female teacher	23	60.33	Average outcome

Table 1 revealed that significant difference in academic performance between students taught entrepreneurship by male and female teachers. Students taught by female teachers had a higher mean score (60.33) than those taught by male teachers (54.86). This suggests that female teachers may be more effective in teaching entrepreneurship education in technical and vocational colleges. Possible explanations include creating a positive learning environment and teaching the specific content of entrepreneurship education.

Research Question 2: Does teachers' certification level impact students' academic performance in entrepreneurship education in technical and vocational colleges?

Table 2

The mean scores of students taught entrepreneurship by the teacher M.Sc degree and bachelor's degree.

Teachers' Certification	Numbers of Students	Mean Score	Remark
Teacher with M.Sc	13	54.36	Average outcome
Teacher with bachelor	47	53.83	Average outcome

Table 2 revealed that The study found no significant difference in academic performance between students taught entrepreneurship by teachers with Master's and Bachelor's degrees. While students taught by Master's teachers had a slightly higher mean score (54.36), this difference was not statistically significant. Possible explanations include the complexity of entrepreneurship education and the experience of teachers with Bachelor's degrees. The study suggests that schools and colleges don't need to require Master's degrees for teaching entrepreneurship education and suggests that teacher training programs should focus on developing the necessary skills and knowledge for all teachers, regardless of certification level. However, the study's small sample size and lack of control for other factors like prior knowledge and motivation may limit its generalizability.

Hypothesis 1: There is no significant difference in the academic performance of students taught entrepreneurship education by male and female teachers.

Table 3

The analysis of variance (ANOVA) of mean scores of students taught entrepreneurship by male and female teachers.

Source of Variation	Sum of Squares	Df	Mean Square	F	Sig
Between People	974.714	6	162.452	162.452	.000
Within People	1.143	1	1.143		
Between Items	955.857	6	159.310		
Residual	957.000	7	136.714		
Total	1931.714	13	148.593		

Table 3 revealed that the ANOVA analysis reveals a significant difference in the academic performance of students taught entrepreneurship education by male and female teachers. Female teachers may be more effective in teaching entrepreneurship education due to factors such as creating a positive learning environment and teaching specific content. This suggests that schools and colleges should consider hiring more female teachers and focus.

On developing the skills and knowledge needed for female teachers to teach entrepreneurship education effectively. However, the study's small sample size may not generalise to all technical and vocational colleges and does not control for other factors affecting students' academic performance, such as prior knowledge and motivation. Therefore, it is recommended that teacher training programs focus on developing the necessary skills and knowledge for female teachers.

Hypothesis 2: There is no significant difference in the academic performance of students taught entrepreneurship education by teachers with Master's degrees and Bachelor's degrees.

Table 4

The analysis of variance (ANOVA) of the mean scores of students taught entrepreneurship by the teacher with an M.Sc degree and bachelor's degree.

Source of Variation	Sum of Squares	Df	Mean Square	F	Sig
Between People	1872.464	13	144.036	0.022	.885
Within People	2.893	1	2.893		
Between Items	1729.607	13	133.047		
Residual	1732.500	14	123.750		
Total	3604.964	27	133.517		

Table 4 revealed that the study found no significant difference in the Mean scores of students taught entrepreneurship by teachers with M.Sc and bachelor's degrees. However, the ANOVA analysis showed a significant difference in academic performance between male and female teachers, $F(1, 6) = 162.452$, $p < 0.05$. This suggests a significant difference in academic performance between male and female teachers. However, the results may not be generalisable to all technical and vocational colleges and were not controlled for other factors affecting students' academic performance, such as prior knowledge and motivation.

Discussion of Findings

The quality and effectiveness of teachers significantly impact students' academic achievement in entrepreneurship education in technical and vocational colleges in Lagos State, Nigeria. Experience and expertise in teaching entrepreneurship positively influence students' learning outcomes. Experienced teachers employ diverse instructional strategies, manage classroom dynamics, and provide real-world insights, enriching

students' understanding of entrepreneurship concepts. Conversely, novice teachers may lack the knowledge and pedagogical skills to engage students effectively, potentially hindering academic achievement. Therefore, the quality and effectiveness of teachers play a crucial role in shaping students' educational experiences. Research question one revealed that the outcome of students taught entrepreneurship by male teachers was average; these findings are in agreement with Owolabi and Adebayo (2017), which revealed that the teacher's sex does not affect their ability to impact the knowledge of the students, much as he/she is a skilled teacher in that field of study. However, Akiri and Ugborugbo (2018) revealed that there was a significant relationship between teachers' gender and students' academic achievement. Research question two revealed that the outcome of students taught entrepreneurship by a teacher with an M.Sc degree was average; this is in line with Rivkin et al. (2015) study, which revealed that teachers' years of service and educational certification were not significantly related to students' achievement. On the contrary, Owolabi and Adebayo's (2017) study revealed that students taught by teachers with higher certifications performed better than those taught by teachers with lower certifications. Adeyemi (2020) found that teachers' experience and educational qualifications were the prime determinants of students' academic outcomes. Furthermore, Bolarinwa's (2014) study revealed a positive relationship between teachers' characteristics (Qualifications and Experience) and the performance level of the students.

Conclusion

This study investigated the impact of teachers' characteristics—specifically sex and certification level—on students' academic achievement in entrepreneurship education within technical and vocational colleges in Lagos, Nigeria. The findings revealed several significant insights: students taught by female teachers demonstrated higher academic performance than male teachers. The mean scores indicated that female educators may be more effective in fostering a positive learning environment and delivering content effectively. No significant difference was found in academic performance between students taught by teachers with Master's degrees and those with Bachelor's degrees. This suggests that certification level may not be a decisive factor in the effectiveness of teaching entrepreneurship education. The results show that teachers' sex and certification do not significantly influence students' outcomes, regardless of gender, teaching experience or the teacher's degree. This suggests that the rate of students' outcomes remains consistent regardless of the teacher's gender or teaching method. The study suggests that sex and certification should not be substantial criteria for selecting technical education teachers, suggesting that other factors such as gender and certification should not be considered in the selection process. These findings highlight the importance of teacher characteristics in influencing student outcomes, particularly in technical and vocational education settings. The study suggests several recommendations to improve students' academic achievement in entrepreneurship education.

1. Educational authorities should invest in continuous professional development of entrepreneurship teachers through workshops, seminars and training programs.
2. Rigorous qualification standards for teachers should be established to ensure they possess relevant academic qualifications and expertise.
3. Teachers should receive practical pedagogical training to enhance their teaching methods and classroom management skills.
4. Mentorship programs and collaborative initiatives can facilitate sharing best practices and innovative approaches.
5. Educational institutions and stakeholders should support research and innovation in entrepreneurship education, including funding research projects, access to industry networks, and platforms for showcasing innovative teaching practices.

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