

## TEACHERS' QUALITY AND STUDENTS' ACADEMIC PERFORMANCE IN TECHNICAL DRAWING IN POLYTECHNICS

**ANETEKHAI, Agnes. O.**

Department of Building Technology, Auchu Polytechnic, Auchu, Edo State.

[anetekhaiagnes@gmail.com](mailto:anetekhaiagnes@gmail.com) +2348128281871;

*Corresponding Authors:*

**OVIawe, Jane Itohan Ph.D**

Department of Vocational and Technical Education, Ambrose Alli University, Ekpoma.

[janeoviawe@aauekpoma.edu.ng](mailto:janeoviawe@aauekpoma.edu.ng); [janeoviawe98@gmail.com](mailto:janeoviawe98@gmail.com) +2348055601983; 09030854009

**UWAMEIYE, Raymond Ph.D**

Department of Vocational and Technical Education, Ambrose Alli University, Ekpoma

Faculty of Education Ambrose Alli University, Ekpoma, Edo State.

[uwameiye@aauekpoma.edu.ng](mailto:uwameiye@aauekpoma.edu.ng)

### Abstract

*The study examined the influence of teachers' quality on polytechnic students' academic performance in technical drawing in Edo and Delta States, Nigeria. The study was guided by two research questions and one null hypothesis. The population consisted of 1,917 students and their 27 lecturers in six public polytechnics under study. Using a proportionate sampling technique, a sample of 575 students were selected which represented 30% of total number of students, and the entire 27 Technical drawing lecturers were used for the study. The data were collected using two instruments titled "Technical Drawing Teachers' Quality Questionnaire (TDTQQ), and Technical Drawing Achievement Test (TDAT) which were developed by the authors and face-validated by three specialists (Technical Education and Test and Measurement) in Ambrose Alli University, Ekpoma. To ensure content validity of the TDAT, a table of specification was built for the test. Mean, standard deviation, Pearson Product Moment Correlation were used to answer the research questions and Binary Logistic Regression was used to test the null hypothesis at .05 probability level of significance. Findings indicated that the students' performance in technical drawing was very poor. It was also revealed that there was a significant but negative correlation and relationship between teachers' quality and students' academic performance. The teacher's quality had a greater influence ( $\chi^2 = 40.294$ ,  $r^2 = .091$ ) on academic performance of students. It was recommended among others that technical drawing teachers should acquire adequate knowledge and skills in pedagogy of teaching.*

**Key Words:** Performance, Polytechnics, Quality, Teacher, Technical Drawing

### Introduction

Education is a wealth of knowledge acquired by an individual after studying a particular subject matter or experiencing life lessons that provide an understanding of something. Nigeria, like all

other developing nations, needs a type of education that can liberate its citizens from premature ideas about work (Fakeye, 2015). This desired type of education is Technical Vocational Education and Training (TVET). TVET refers to the study of sciences and technology; acquisition

of practical skills; attitudes and knowledge relating to occupation in the various sectors of the economy and social life (Oviawe, 2020). TVET is offered as prevocational education at the junior secondary school level; vocational education at the senior secondary/technical college level; technical education at the polytechnic/college of technology level and TVET teacher education at the universities and colleges of education level (Federal Republic of Nigeria (FRN), 2013).

According to the FRN (2013), the polytechnics were primarily established to train technical middle-level manpower to drive the economy, to produce technologists who would use their technical skills to work in industries or go to the universities to acquire more sophisticated skills in their chosen careers. Polytechnic education is an “incubator for hatching” saleable skills and nurturing vocational competence of its clientele. The polytechnics have a mandate to give quality technical education to help to develop and enhance the individuals’ knowledge of science and technology in broad occupational areas requiring technical and professional competencies and specific occupational skills (Mohamud & Abdulle, 2015).

To achieve this occupational development in conjunction with personal and social development of the individual and their communities, there is the need to inculcate the ability of reflective thinking through a detail, precise diagram or plan that can convey information about how an object is constructed, which is known as Technical Drawing. Technical Drawing is one of the core technical courses taken in polytechnics by all engineering and technology students. It is a tool for communicating ideas between people on any project in industries, between countries, in the social media–newspapers, magazines and television. Technical Drawing describes the process of producing a design or engineer’s vision into a physical form. For instance, it is also used for building drawing, electrical drawing, and architectural drawing among others.

Anetekhai and Ebube (2021) asserted that considering the scientific technology revolution in the world of work, the global acceptance of AutoCAD, ArchiCAD, among others, in construction work and large graduate unemployment in Nigeria only adequate knowledge of technical drawing could help to develop skilled personnel who will be enterprising and self-reliant in order to move Nigeria to a greater height technologically.

Adequate knowledge and skills in technical drawing by an individual could enable them fit into any of the technology-based occupations and become useful to the society. The following professionals need Technical Drawing at some point in their careers. Anyone who builds or creates, application designers, production designers, and aeronautical drafters among others. If students are properly guided in these areas of specialization, unemployment, underemployment, poverty, and insecurity among others will no longer be problems for our Country. It is unfortunate, that in Nigeria today the technical courses such as metal work, wood/building construction, electrical/ electronic works are not taught in most secondary school as stipulated in the education policy document of Nigeria (FRN, 2013).

These could only be achieved when adequate quality teachers who teach Technical Drawing are recruited for the benefits of students. Quality teachers are generally positive minded individuals who believe in the success of their students as well as their own ability to help students achieve. Competence and knowledge of the content area being taught is something that makes a well-prepared teacher more likely to take time during lessons to notice and attend to behavioral matters, effective use of instructional time, students’ participation and thereby, academic success.

## Statement of the Problem

Over the years, parents, governments and other stakeholders in technical education have been worried over students' poor performance in Nigerian tertiary institutions. Researchers such as Oviawe and Adeola (2017); Uddin et al. (2019); and Oviawe (2020) lamented over students' poor performance in technical drawing at various educational levels. Also, in Auchi Polytechnic, Auchi result trend in Technical drawing in 2017, 2018, 2019 and 2020, show that 24%, 26.6%, 24% and 20% scored 40% and above. (Exams and Records Division, 2020). Also, in Edo State Polytechnic Usen, Edo State, students' results in sessional examination showed that 33.3%, 17.1%, and 13.8% of the students passed in Technical Drawing for 2017, 2018, and 2019 while 67%, 82.9% and 86.2% failed the course during the periods (Exams & Records Division, 2020). This is worrisome! However, many factors affect students' performance in this course, these include: the schools' environment; students, teachers' quality, frequent strikes, among other. Therefore, the problem of this study is that, there is poor academic performance of students in Technical Drawing in polytechnics which could be attributed to issues related to teachers' quality listed above. The teacher is the most important resource in educational sector all other resources revolve around him/her. Hence, this study investigated how teachers' quality could affect the performance of polytechnic students in technical drawing in Edo and Delta States.

## Purpose of the Study

The purpose of this study is to ascertain the influence of Teachers quality, on polytechnics students' academic performance in technical drawing in Edo and Delta States. Specifically, the focus of this study was to determine:

the level of academic performance of polytechnic students' in technical drawing in Edo and Delta State.

the influence of teachers' quality on polytechnic students' academic performance in technical drawing in Edo and Delta States, Nigeria.

## Theoretical Framework

This study was anchored on Trait theory, which originated from psychological research in the early 20<sup>th</sup> century by Gordon Allport and Raymond Cattell. It focuses on identifying and understanding specific individual quality that influences behavior and performance. These are inherent qualities that an individual possesses. These traits include: enthusiasm, empathy, patience, and a genuine interest in students' welfare and learning. Teachers with positive traits can create a conducive learning atmosphere, motivate students and foster a passion for learning.

These traits enable teachers to self-assess, develop targeted skills, manage classrooms more effectively, establish better communication, and create positive learning environments for their students. The technical drawing teachers in Edo and Delta States do not possess these qualities adequately! Hence their students' performance is very low.

## The Key Qualities that make a good Teacher

A good teacher has a blend of skills, qualities, and characteristics that creates a supportive and effective learning environment for students. These qualities collectively make a teacher effective, inspiring, and capable of positively impacting their students' lives. Here are some of the key qualities that make a good teacher according to Ali et al. (2020):

*Passion for Teaching:* A good teacher is passionate about the subject he/she teaches and genuinely enjoys helping students to learn, which makes learning attractive and exciting.

*Effective Communication:* Good teachers explain complex concepts in a clear and significant way. They also listen to students' worries and

encourage open discussions.

*Adaptability and Flexibility:* A good teacher should be flexible and able to adjust his/her teaching methods to fit the varying needs of students, creating lessons that cater for different learning styles.

**Patience:** Every student learns at his own pace, and a good teacher is patient and understanding, offering help as needed and allowing students to grow and develop without pressure.

*Empathy and Compassion:* A good teacher is sympathetic, understanding the challenges students face, both academically and personally, and offers support and encouragement to motivate the students.

*Creativity:* This is another quality of the teachers that makes him/her conspicuous from other professions. Creative teachers find new, interesting ways to engage students, making lessons dynamic and interactive, which helps maintain students' interest and curiosity.

*Strong Knowledge Base:* A good teacher has a deep understanding of their subject, enabling them to answer questions, provide insights, and encourage students to think critically.

*Classroom Management Skills:* Good teachers maintain a structured and positive environment, setting clear expectations and encouraging respectful interactions, which help students feel safe and focused.

*High Expectations:* Effective teachers set high standards for all students, motivating them to do their best and encouraging a growth mindset, where effort and improvement are valued.

*Enthusiasm and Positivity:* A positive attitude can revitalize the classroom and make learning enjoyable. Enthusiasm from a teacher often inspires students to engage more with the material, do their homework, classwork and assignments regularly.

*Fairness and Respect:* A good teacher treats all students fairly, fostering a sense of respect and trust in the classroom, which helps students feel valued and respected.

*Reflectiveness:* Great teachers regularly reflect on their teaching practices, seeking feedback and continually working to improve, showing a commitment to their growth as educators.

To this end, Usman and Abubakar (2020) reported that teachers' quality is what makes up a good teacher. A good teacher must have: (i) communication skills; (ii) master subject content; (iii) collaboration skills; (iv) adaptable and be able to show empathy and understanding; (v) share best practices and have creative skills.

A good teacher must also exert high self-efficacy. Self-efficacy determines the goals one pursues, and how these goals are accomplished. The teacher's self-efficacy affects the effort he/she puts into teaching, the goals he/she set up, and the level of target set up. This quality influences teachers' persistence when things do not go smoothly and their resilience in the face of setbacks. These qualities cannot only help a good teacher to maintain good classroom relationship, but can directly have influence on students' learning in the classroom. Students learn differently either fast or slowly, so the teachers need to always pay close attention to ensure each student learn at his/her own pace. Teacher's quality characteristics such as certification status and degree in the field to be taught are very significantly and positively correlated with student performance. If teachers are properly trained, it is expected that they may effectively influence the student performance, regulate their instructional methods based on learners' age and individual differences, available resources, ever dynamic curriculum, best practices and the societal needs (Arsha et al., 2015). It seems as if the technical drawing

teachers in Edo and Delta States do not possess these qualities, which, in turn, hinders students' performance

Gepila (2020) further listed seven domain of teachers' quality which includes: content knowledge and pedagogy; learning environment; diversity of learners; curriculum and planning; assessment and reporting; community linkages and professional engagement; and personal growth and professional development. He further stated that teacher quality characteristics such as certification status and degree in the field to be taught are very significantly and positively correlated with student performance and if teachers are properly trained, it will definitely have positive effects on students' performance.

Adeleke and Manuel (2019) observed the following as challenges facing teachers' quality in Nigeria: Non professionalization of teaching in Nigeria which made it possible for many unqualified to practice teaching; the low social status ascribed to teaching; the poor remuneration and other motivational incentives in teaching jobs; poor professional entry points affect teaching profession negatively and lack of quality training.

Ali et al. (2020) examined the influence of teacher' quality on students' academic performance among public senior secondary schools in Maiduguri Metropolis, Borno State. The results of the findings showed that teachers' quality influenced students' academic performance significantly. The way teachers interact with the students influence their seriousness and approach toward school and their academic performance. Academic performance of students' is often seen as a standard for testing educational quality of a nation. Poor academic performance brings untold hardships and frustration to an individual and backwardness in the development of a nation (Medupin et al., 2015). For Technical drawing to serve as a fundamental communication tool for engineers, designers, and innovators, there is need for

technical drawing teachers' quality to be adequate so that they could possess high professional development and ability to motivate students, teaching methodologies, communication skills, and organization of content and planning of lessons (Mohamud & Abdulle, 2015).

### **Factors Affecting Teachers' Quality**

The teachers' quality has been shown to have an important role on students' academic performance. These roles seem not to be accurately achieved because of these factors: i) school location; ii) No support structures in place for teachers; iii) insufficient training and professional development; iv) lack of resources; v) overwhelming workload and class sizes; vi) low pay and job insecurity; vii) curriculum constraints and testing pressures; viii) Challenging classroom environments and issues with student behavior (Oviawe, 2020).

These barriers have affected students' performance especially in technical drawing resulting to poor performance in the course. Therefore, the influence of teachers' quality on students' academic performance in polytechnic is apt.

### **Relationship between Teachers' Quality and Academic Performance**

Students who have access to highly qualified teachers tend to achieve at a higher rate, regardless of other factors

A teacher's passion for teaching can be positively impart students' performance by creating a caring learning environment that motivate students to learn and set high goals.

Effective communication is also one of the teacher's qualities that affect students' communication. This motivates the students to enhance their abilities in the subject matter and encourages them to work harder in their studies.

The flexibility of a teacher in the classroom environment can help to promote students'

performance because the teacher is able to adjust his/her teaching methods to cater for individual rate of learning.

Teacher's patience is necessary in a classroom environment because it enables students to learn at their own pace, thereby enabling the students to develop their retentive capacity without pressure.

Skilled teachers are better equipped to implement curricular effectively, adapt lessons to meet diverse students' needs, differentiate instruction, and incorporate innovative teaching strategies that can enhance academic learning experiences (Anetekhai, 2024).

### Methods of the Study

Correlational research design was adopted for the study because when the teachers' quality increases this will also increase the academic performance of students. The population consists of 1,917 students and 27 lecturers in six public polytechnics in the study area, in 2020/2021 academic session. The proportionate and consensus sampling techniques were utilized to select 575 technical drawing students which represent 30% of the total number of students and 27 teachers. This proportionate sample was used to provide more accurate mean score, identify outliers that could skew the data in a small sample and provide a small margin of error (Zamboni, 2018).

The data were collected using two instruments titled Technical Drawing Teachers' Quality Questionnaire (TDTQQ) and Technical Drawing Achievement Test (TDAT). The instruments were modified by the authors and the face-validation done by three experts (in technical education and test and measurement) in Ambrose Alli University, Ekpoma. The instrument adopted a 4-point scale of Strongly agree (SA)=4, Agree

(A)=3, Disagree (DA)=2 and Strongly Disagree (SD) =1. The benchmark of the weighted responses was 2.50, which indicated a positive response, while a mean score below indicated a negative response.

To ensure content validity of the TDAT, a table of specification was built for the test. A pilot study was conducted by administering 30 copies of TDAT on the students and a copy of TDTQQ each was administered on the Lecturers in Federal Polytechnic, Ile Oluji in Ondo State. Cronbach's alpha was used to analyze the data which yielded a reliability coefficient alpha value of .60 and .75 respectively, which indicated that the instruments were adequate for use in this study.

Mean, standard deviation, Pearson Product Moment Coefficient was used to answer the research questions and the decision rule for answering research questions thus: low quality (1.0-2.9); Average (3.0-4.9); High (5.0- above). While Binary (linear) Logistic Regression was used to test the hypothesis at .05 probability level. Binary (linear) Logistic Regression was employed, because it helps to identify risk factors for dropout rates, or assessing the impact of interventions on outcomes. The decision rule for testing the hypotheses is that if any probability value more than alpha value, hypothesis was retained but any alpha value more than probability value, and hypothesis was rejected. Decision rules: Any probability value more than alpha value, hypothesis was retained but any alpha value more than probability value, and hypothesis was rejected.

### Results

**Research Question 1:** What is the level of academic performance of polytechnic students in technical drawing

**Table 1: Level of Academic performance of Selected Students in Technical Drawing in Edo and Delta States**

S/N	Descriptions	Performance Level	Percentages
1	No of students with 40% and above in TDAT	230	40%
2	No of students with 39% and below in TDAT	345	60%
3	Total No of Students	575	100%

Table 1 showed the rates of students' performance in technical drawing. 230 (40%) of the students passed the test at 40% while 345 (60%) scored below 40%. A critical analysis of the scores of students in Technical Drawing Achievement Test (TDAT) indicated that the levels of students performance is very low.

**Research Question 2:** Does teachers' quality influence students' academic performance in technical drawing in polytechnic in Edo and Delta

States, Nigeria?

To determine the relationship between teachers' quality and students' academic performance in technical drawing, the Pearson Product Moment Correlation was performed. The analysis revealed a significant correlation at the .01 level (2-tailed), indicating that teachers' quality has a meaningful impact on students' performance in this subject. The result is summarized as follows:

**Table 2: Influence of Teachers' Quality on Polytechnic Students' Academic Performance in Technical Drawing in Edo and Delta States**

	Teachers' Quality	Students' Performance	Academic
Teachers' quality	Pearson Correlation 1	-.263**	
	Sig. (2-tailed)	.000	
	N	575	575
Students' Academic Performance	Pearson Correlation -.263**	1	
	Sig. (2-tailed)	.000	
	N	575	575

\*\* . Correlation is significant at the .01 level (2-tailed).

Table 2 shows the influence of the independent variable of teachers' quality and polytechnic students' academic performance in technical drawing in Edo and Delta States, Nigeria. The Pearson Product Moment Correlation was used to determine the relationship between teachers' quality and students' academic performance in technical drawing.

The results showed that there is a significant, but negative correlation between teachers' quality and

students' academic performance. (N=575,  $r=-.263$ ,  $p < .05$ ). By and large, teachers' quality had a significant but negative correlation on students' academic performance in technical drawing in polytechnics.

### Testing Research Hypothesis

Research Hypothesis 1: Teachers' quality does not significantly influence polytechnic students' academic performance in technical drawing in Edo and Delta States, Nigeria.

**Table 3: Influence of Teachers' quality on students' academic performance**

		<b>B</b>	<b>S.E.</b>	<b>Wald</b>	<b>df</b>	<b>Sig.</b>	<b>Beta Value</b>
Step 1 <sup>a</sup>	TQ	-.086	.014	37.789	1	.000	.918
	Constant	2.314	.448	26.656	1	.000	10.111

a. Variable(s) entered on step 1: TQ.

Note: Nagelkerke  $R^2 = .091$ ; TQ means Teacher Quality

The results of the binary logistic regression on Table 3 indicated that teachers' quality scored 9.1% of the variance ( $\chi^2 = 40.294$ , Nagelkerke  $R^2 = .091$ ,  $P < .05$ ) and it is statistically significant. Thus, the calculated binary regression ( $r^2 = .091$ ) was less than the alpha level (.05). The null hypothesis which states that teachers' quality does not significantly influence students' academic performance in technical drawing is rejected. Teachers' quality significantly influences polytechnic students' academic performance in technical drawing in Edo and Delta States, Nigeria. All in all, teachers' quality had a significant but negative influence on polytechnic students' academic performance in technical drawing.

### Discussion of Results

This analysis of the research questions raised and the hypothesis tested revealed some interesting findings which are discussed below:

Students' academic performance in technical drawing in Edo and Delta States, Nigeria was very poor. This is in line with some other studies, for instance Medupin et al. (2015) who reported poor performance in Engineering Drawing in Nigerian Polytechnics: A case study of the Federal Polytechnic Bida, Niger State, Nigeria. The reason was that some aspects of the teachers' personal quality enumerated above have negatively influenced students' performance in technical drawing at various educational levels. Oviasu (2013) reported that the results of 2013

WAEC technical drawing showed that about 78.3% of the students that sat for WAEC failed and only 21.7% passed is in line with the findings of this study.

Furthermore, Oviawe and Adeola (2017); Uddin et al. (2019); Oviawe, (2020) and Anetekhai (2024) have affirmed students' poor performance in technical drawing at various educational levels. This state of affairs cannot necessarily produce the knowledge for the actualization of the objectives of teaching technical drawing, which is to prepare its recipients for the world of work in technology related fields.

Secondly, the academic performance of students in technical drawing was influenced by teachers' quality. This is in line with Ali et al. (2020) whose report found significant relationship between teachers' quality and students' academic performance in Maiduguri Metropolis, Borno State. This finding corroborates with Odoh et al. (2020), which also confirmed that regardless the level of preparation, students bring into the classroom, decisions that teachers make about subject matter can either greatly facilitate students learning or serve as an obstacle to it. So, a trained technical teacher uses skills, principles and different methods to achieve his/her goals better than an untrained teacher who has no such knowledge. However, the results of the findings of this study are at variance with Faize (2011) who found no difference in teachers' quality and higher academic performance. Teachers' quality

is not effective but instead the prior achievement is the most effective.

The literature highlights that teacher's quality is a strong predictor of students' success, especially in under- resourceful instructional environments. From the finding of this study, it is clear that teachers' quality significantly influenced polytechnic students' academic performance in technical drawing.

### Conclusion and Recommendation

Technical Drawing is the only precise language, which can be used to express the technologist's mind to the producer. Adequate knowledge/skills in technical drawing by an individual can enable them fit into any of the technology-based occupations and become useful to the society. If the nation must advance in technology, there is need for the citizens to master the short hand language and tool (technical drawing) used in the workshop where goods are produced. Therefore, it is necessary to have professional skilled, competent, teachers with high quality to enhance the realization of the dreams and expectations of Technical Drawing programme in our technological institutions. The following recommendations are enumerated:

All Technical Drawing teachers should endeavor to acquire appropriate professional training and adequate knowledge and skills in pedagogy.

All Technical drawing teachers should endeavor to undergo sufficient training on the use of AutoCAD software to boost their performance and confidence to be able to effectively teach their students in this era of modern technological advancement. Furthermore, they should exhibit qualities such as patience, empathy, and flexibility towards their students.

### References

- Adeleke, O.P., & Manuel, M.N. (2019). Teacher quality: A tool for sustainable human and national capital development in Nigeria. *UNILAG Journal of Curriculum and Instruction, 1*(1), 230-239. Retrieved from <https://www.researchgate.net>344>
- Ali, M., Tela, M.G., & Saleh, B. (2020). Impact of teachers' quality on academic performance of students in public senior secondary schools in Maiduguri metropolis, Borno State, Nigeria. *Asian Journal of Education and Social Studies, 11*(3), 18-24. Retrieved from <https://doi.org/10.9734/ajess/2020/v11i330292>
- Anetekhai, A.O. (2014). Empowerment of youths and transformation of national economy through technical and vocational education, *Journal of Collaborative Research and Development, 2*(2), 64-76.
- Anetekhai, A. O., & Ebube, C. O. (2021). Importance of technical drawing in addressing challenges to Technological Development. *Journal of Applied Science and Technology (JAST), 12*(1), 138-147. Retrieved from [www.sast.auchipoly.net](http://www.sast.auchipoly.net) [www.ejast.com](http://www.ejast.com)
- Anetekhai, A.O. (2024). Influence of teachers' characteristics on students 'academic performance in technical drawing in polytechnic in Edo and Delta State, Nigeria. *Unpublished Ph.D Thesis, Ambrose Alli University Ekpoma, Edo State.*
- Arshad.M., Zaidi, S. M., & Mohamood, K. (2015). Self-esteem and academic performance among university students. *Journal of Education and Practice, 6*(1), 165- 176. [www.iiste.org](http://www.iiste.org).
- Blömeke, S., Olsen, R., & Suhl, U. (2019) Relation of students' achievement to the quality of their teachers and instructional quality. *IEA Research for Education, 2*(3),

21–28. Doi: 10.1007/978-3-319-41252-8

22-29.

- Chokera, K.J. (2014). Influence of teacher characteristics on students' academic performance in public schools in Kenya: A case of Akithi Division, Meru County, Kenya. *Master of Arts thesis University of Nairobi*.
- Daso, P.O. (2013). Teacher quality and secondary school students' achievement in mathematics in Rivers State. *Journal of Educational Research International*, 1(3), 41- 48.
- Federal Republic of Nigeria (2013). *National policy on education*, Lagos: NERDC Press.
- Gepila, J.E. (2020). Assessing teachers using Philippine Standards for teachers. *Universal Journal of Education Research*, 8(3), 739-746.
- Hassan, B., Alias, M., Saleh, K.M., & Awang, H. (2017). Students' perceptive of their teachers' performance in teaching engineering drawing in Nigerian tertiary institutions. *Raektona Nauki = Path of Science*, 3(10), 3001-3013.
- Medupin, R.O., Abubakre, O.K., Adebayo, S.A., Enock, O.I., & Suleyman, F.A. (2015). Students' academic performance in engineering drawing in Nigerian Polytechnic. A case study of Federal Polytechnic Bida, Nigeria. *Journal of Multidisciplinary Engineering Science and Technology*, 2(2), 158-167.
- Mohamud, A.S., & Abdulle, M.M. (2015). Teacher quality and student achievement at secondary stage in Mogadishu Somalia. *Educational Research International*, 4(1),
- Odoh, L.C., Ugwuanyi, U.B., Odigbo, B.E., & Chukwuani, N.V. (2020). Influence of parental involvement and level of education on academic performance of accounting students Nigeria. *Research on Humanities and Social Sciences*, 7(10), 21-30.
- Oviawe, J.I. (2020). Influence of teacher quality and professional development on the students' academic performance in technical drawing in technical colleges. *Australian Journal of Science and Technology*, 4(1), 242-249.
- Oviawe, J.I., & Adeola, L. (2017). Effects of concept mapping instructional strategy on students' academic performance and interest in technical drawing in technical colleges in Edo State, Nigeria. *IOSR Journal of Research and Method in Education*, 7(3), 9-15.
- Uddin, P.S.O., Nwachokor, S., & Uwameiye, R. (2019). Influence of teachers' qualification in the teaching of technical drawing in technical colleges in Edo and Delta States, Nigeria. *International Journal of Academic Research in Business and Social Sciences*, 9(5), 578-587. Retrieved from <http://dx.doi.org/10.6007/IJARAFMS/v9-i5/5906>
- Usman, M., & Abubakar, M. (2020). Impact of teachers' quality on students' academic performance in secondary schools in North Central Zone, Nigeria. *African Scholars Journal of Contemporary Education Research*, 18(8), 134-145.