# INVESTIGATION OF CAUSES OF LOW PERFORMANCE OF STUDENTS IN TECHNICAL DRAWING IN KWARA STATE TECHNICAL COLLEGES

**BY**

NDASHIRU MARTINS

Department of Building Education, Kwara State College of Education (Technical), Lafiagi. Email: shirumartins@gmail.com; phone number: 08065854800

ADEDAYO KAYODE ELIJAH

Department of Electrical/ Electronics Education, Kwara State College of Education (Technical), Lafiagi. Email: kayodeelijah@yahoo.com; phone number: 07063090285

SERIKI MUSTAPHA KAYODE

Department of Electrical/ Electronics Education, Kwara State College of Education (Technical), Lafiagi. Email: serikimk@yahoo.co.uk; phone number: 08065852042

## ABSTRACT

*This study investigated the low performance of students in technical drawing subject in technical colleges in Kwara State. Three technical colleges in the state were selected for this study and to elicit the needed information for the study, structured questionnaires were administered to one hundred and twenty (120) students, 40 in each of the schools selected. The findings from the study revealed that students perform below expectation in Technical drawing due to lateness to class, lack of technical drawing equipment and material, students not doing homework, lack of sufficient motivation, and inadequate experienced teachers. It was recommended that Government should regularly supply instructional materials to all technical colleges, the teachers should be given enough orientation and training, and more qualified technical drawing teachers should be employed.*

**Keywords:** Technical drawing, performance, interest, motivation.

## INTRODUCTION

Technical drawing is a means of communicating shapes, sizes, positions and proportion, features and precision of physical objects. It is also a graphic language of communication, which uses lines, symbols, abbreviation and letters that have wide acceptability. In Nigerian educational system Technical Drawing/Graphic is in practice as a subject/module at various levels such as post-primary schools and tertiary institutions.

Technical drawing subject forms a high basis and stands as the bedrock of all science, Technical Engineering and Computer courses. Despite the fact that it is the bedrock, yet the achievement in technical drawing subject is not satisfactory. It is therefore very important to give much attention towards the progress of a young scientist and technicians to know fully how to sketch and draw, so that they will be able to communicate scientific and technological ideas in order to fulfil the present aspirations of Nigeria for the full technological take off.

Researchers, such as Bertoline and Wiebe (2012), Olkun (2013), suggests that a basic understanding of fundamental concepts of projection theory, orthographic projection, isometric drawing, hidden views, and sectional views was problematic to most learners due to poor spatial ability. In addition, the

ability to grasp these topics is critical as it represents the fundamentals of Engineering drawing that deal with the construction of 2D and 3D geometry, and the creation of multi-view and pictorial representations It is not only necessary for academic achievement but also for everyday life.

There is a growing concern over the astronomical decline in students' academic achievements in technical drawing subject in Nigeria. While some experts have blamed the spate of failure on the lack of commitment on the part of government at all levels, others feel it is a problem of implementation of government policies on education. Onyeachu (2010) asserted that no matter how well a curriculum of any subject is planned, designed and documented, implementation of the curriculum is important. All learners at the various levels of the nation's educational system are expected to be provided with appropriate learning experiences. A systematic integration of variety of resources in teaching – learning process and environment produce appropriate learning experiences, which in turn result in effective (active) or meaningful learning.

Okereke (2009) posited that, the quality of an education is properly defined by the Performance of its students and graduates. This in practice is measured by input and output. Therefore, achieving intended learning outcomes can sometimes be blamed on both teachers and students; this can be substantiated by Tafida (2017), who opined that effective teaching and learning of Technical Drawing generally depends on the attitude exhibited by both

teachers and the students taught.

Addressing the worrisome trend of low performance by students has been a crucial issue for the educators and teachers for years. Students' prospects for career pursuits in engineering, technical and vocational education (TVE) were being hampered by their poor performances in Technical and Engineering drawing as a core engineering subject (Diraso*et al*, 2013).

## Purpose of the Study

This study therefore aims at investigating low performance of students in technical drawing subject at technical colleges in Kwara State and ways of improving their performance in the subject.

The objectives of this study is as follows:

i. Investigate the student-interest factors that are responsible for low performance in technical drawing.

ii. Investigate student motivation factors responsible for low performance in technical drawing.

iii. Investigate anxiety factors responsible for low performance in technical drawing.

iv. Investigate teachers' attitude factors responsible for low performance in technical drawing.

## Research questions

This study was guided by the following research questions based on the

problems and purpose of the study.

i. What are the interest-related factors that are responsible for low performance in technical drawing?

ii. What are the motivation-related factors responsible for low performance in technical drawing?

iii. What are the anxiety-related factors responsible for low performance in technical drawing?

iv. What are the teachers' attitude-related factors responsible for low performance in technical drawing?

## RESEARCH METHODOLOGY

### Researcher Design

The research design is a simple survey method used to investigate the low performance of students in technical colleges in Kwara State with sample size of 40 students in each college. The instrument used was questionnaire.

### Population and Sample Techniques

The area of study for this research covers the three selected technical colleges in geographical domain called Kwara state of Nigeria. This research work targeted the whole population of technical college students in Kwara State, but because of the high population of students in the state which could not be covered conveniently by the researcher, for economic and accessibility a sample size of 120 students was selected from these three technical colleges. Thus, a

sample of 40 students from each school was chosen. The random sampling technique was used.

**The Instrument for Data Collection**

The questionnaire was the instrument used in this study. Data were collected by administering the questionnaire to the students by direct delivery. The questionnaires were administered to one hundred and twenty (120) students in the same technical colleges. The entire questionnaires were returned.

**Data Analysis techniques**

The data for this study were analyzed using mean and standard deviation. 4 - point Likert scale of Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD), was used. The responses are assigned the scales 4, 3, 2 and 1 respectively. To determine the acceptance, a mean score or 2.5 was chosen as the decision point. Any item with a mean of 2.5 and above is considered acceptable while mean response that is less than 2.5 is considered being rejected.

**DATA PRESENTATION AND DATA ANALYSIS**

**Research question one**

What are the interest-related factors that are responsible for low performance in technical drawing?

Date needed to answer this research question is presented in table 1.

**Table 1: Mean responses of students interest**

| S/N | STATEMENTS | RESPONSES | | | | | REMARK |
|---|---|---|---|---|---|---|---|
| | | SA | A | D | SD | X | |
| 1. | Nature of technical drawing as a difficult subject. | 60 | 30 | 15 | 15 | 3.13 | Accepted |
| 2. | Lack of technical drawing 1aboratory in the school | 25 | 20 | 40 | 35 | 2.29 | Rejected |
| 3. | Lack of suitable technical drawing textbook in the school | 90 | 20 | 10 | - | 3.69 | Accepted |
| 4. | Lack of understanding technical drawing lesson by students | 60 | 30 | 35 | 5 | 3.21 | Accepted |
| 5. | Lack of enough time allocation for learning technical drawing | 100 | 20 | - | - | 3.83 | Accepted |

Table 1 shows that all the statements on students' interest items 1, 3, 4, and 5 were accepted while 2 was rejected with the mean scores 2.29.

**Research Question two**

What are the motivation-related factors responsible for low performance in technical drawing?

Data needed to answer research question two is presented in table 2.

**Table 2: Mean responses of students on motivation**

| S/N | STATEMENTS | RESPONSES | | | | | REMARK |
|---|---|---|---|---|---|---|---|
| | | SA | A | D | SD | X | |
| 6. | Technical drawing teacher does not encourage student to study hard | - | 60 | 50 | 10 | 2.42 | Rejected |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 7. | Lack of concern on technical drawing performance by parent or guardians | 60 | 45 | 10 | 5 | 3.33 | Accepted |
| 8. | The students are not free from asking questions in the lesson | - | - | 30 | 90 | 1.25 | Rejected |
| 9. | The students are not allowed to see their assessment | 55 | 60 | 5 | - | 3.42 | Accepted |
| 10. | Lack of supplying of technical drawing instruments and materials to students by the School authority. | 100 | 20 | - | - | 3.83 | Accepted |

As shown in table 2, the items, 7, 9, and 10 have the following mean scores 3.33, 3.42, and 3.83 which are under-acceptable decision while item 6 and 8 have mean scores 2.42 and 1.25 which were rejected.

**Research Question Three**

What are the anxiety-related factors responsible for low performance in technical drawing?

Data needed to answer this research question is presented in table 3

**Table 3: Mean responses of students on Examination anxiety**

| S/N | STATEMENTS | RESPONSES | | | | | REMARK |
|---|---|---|---|---|---|---|---|
| | | SA | A | D | SD | X | |
| 11. | The nature of technical drawing question | 35 | 25 | 20 | 40 | 2.46 | Rejected |
| 12. | The massive failure of students in | 60 | 40 | 20 | - | 3.33 | Accepted |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | technical drawing | | | | | | |
| 13. | Uncovered syllabus create anxiety to students when writing final examination | 90 | 20 | - | - | 3.5 | Accepted |
| 14. | Technical drawing consumes much time | 95 | 25 | - | - | 3.79 | Accepted |
| 15. | Lack of regular attendance technical drawing class by student's | 80 | 40 | - | - | 3.67 | Accepted |

Table 3 showed that the items, 11 with mean of 2.46 was rejected and items 12, 13,14, and 15 with mean score of 3.33, 3.5, 3.79, and 3.67 respectively appear positively acceptable.

**Research Question Four**

What are the teachers' attitude-related factors responsible for low performance in technical drawing?

Data needed to answer research question four is presented in table 4

**Table 4: Mean responses of students on Teacher's attitude**

| S/N | STATEMENTS | RESPONSES | | | | | REMARK |
|---|---|---|---|---|---|---|---|
| | | SA | A | D | SD | X | |
| 16. | Lack of attendance of technical drawing teachers to their lesson | 60 | 40 | 20 | - | 3.33 | Accepted |
| 17. | Unfriendly attitude of some technical drawing teachers | 50 | 40 | - | 30 | 11.25 | Accepted |
| 18. | Lack of in-service training for | 80 | 40 | - | - | 3.67 | Accepted |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | teachers | | | | | | |
| 19. | Effective used of training | 90 | 30 | - | - | 3.75 | Accepted |
| 20. | Availability of training technical drawing teacher | 45 | 55 | 20 | - | 3.21 | Accepted |
| 21. | Failure of teacher to correct homework and assignment | 85 | 35 | - | - | 3.71 | Accepted |

Table 4 showed that all the statements on teachers' attitude items 16, 17, 18, 19, 20, and 21, of mean 3.33, 3.47, 3.75, 3.75, 3.21, and 3.71 respectively were accepted.

**Discussion of Findings**

The finding of this study revealed that a large number Correspondents accepted that the students' interest, motivation, anxiety, and teachers 'attitude were among the problems that led to low performance of students in technical drawing Subject in technical colleges in Kwara State.

The study revealed that many students have lost interest in technical drawing Subject as they always tend to abscond from the lesson and do come late to the classroom, not doing homework and copying assignments from friends for submission. According to Hanmis (2017) in the process of education, pupils' attitude or interests correlated to that of teacher. He further said that attitude of teachers affect that of the students.

The study revealed that students' interest in learning, from analysis of

research question one is significant to their performance in the subject. The study further revealed that, lack of supplying of technical drawing instruments and materials to the students by the school authority led Students not been motivated. Hans (2012) stated that many of the vocational and technical education teachers did not receive enough in service education or refresher course. Due to poor salaries been paid to vocational and technical educator teachers, many of them were leaving the teaching profession to take up jobs in private industries and creating shortage of manpower in vocational and technical education institution.

The study revealed, in research question two that the item on lack of supplying of technical drawing instruments and materials to students by the school authority led to low performance of student's in technical drawing subject. The analysis of the respondents on research question three revealed that massive failure of students in technical drawing brings anxiety to students for not passing the subjects.

The study revealed that some teachers were not using teaching aids which also led to the low performance of students in learning technical drawing subject. The study revealed that teacher's attitude is significant to the student's performance in learning technical drawing subject. From the discussion so far, it could be said that the problems causing low performance of students in technical drawing subjects could be related to teacher methods of teaching and

students' interest and anxiety on the subject.

## Conclusion

The findings from the study revealed that students perform below expectation in Technical drawing due to lateness to class, lack of technical drawing equipment and material, students not doing homework, lack of sufficient motivation, and inadequate experienced teachers. One obvious implication of this finding was lack of laboratory, adequate facilities. Enough laboratory facilities will improve the performance of students in technical drawing subject. This can also improve the students, teachers, interest and motivation in technical drawing subject.

## Recommendation

The following recommendations are made based on findings of the study:

1. The teachers should be given enough orientation in the area of production and utilization of instructional material for effect teaching of technical drawing subject.

2. The professional trained technical teachers should be employed to teach technical drawing subject in each technical colleges.

3. The state government should encourage both the local governments, private, sectors, and community at large for more participation in the planning and administration of technical education as well as bear part of the financial burden.

4. Students should be well enlightened on the nature and benefits of technical drawing subject in their society.

## REFERENCES

Bertoline, G.; and Wiebe, E. (2012) Technical Graphics Communication (3rd Ed.). New York:McGraw-Hill.

Diraso, D.K., Manabete, S.S., Amalo, K., Mbudai, Y.D., Arabi, A.S. (2013). Evaluation of Students' Performance in Technical and Engineering Drawing towards an effective Career Choice in Engineering and Technical and Vocational Education. *Int. J. Educ. Res. Dev.* Vol. 2(4), pp. 089-097, 2013.

Federal Republic of Nigeria (2013). National policy on education. Lagos: NERDC.

Hanmis, N. (2017). Vocation and Technical Education in selected high schools of South Korea Lagos, Macmillan.

Hans, L (2012). Vocational and Technical Education in Nigeria, A seminar paper presented at University of Lagos 12-14.

Okereke, S. (2009), Investment in Education for Developing Countries National Strategy Options, Lagos, Macmillan.

Olkun, S. (2013). Making Connections: Improving Spatial Abilities with Engineering Drawing Activities, *International Journal of Mathematics Teaching and Learning*, Vol. 4(4), pp.1-5.

Onyeachu, J.A.E. (2010). Curriculum Implementation at the Primary Education Level Challenges for the 21st Century in *Multidisciplinary Journal of Research Development*. 10(1), 38 – 49.

Tafida, (2017) evaluation of the education skills of JSS students in river Schools, Lagos