

RELATIONSHIP BETWEEN SELF-CONCEPT AND STUDENTS' ACADEMIC PERFORMANCE IN
TECHNICAL DRAWING IN TECHNICAL COLLEGES IN EDO STATE

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Abstract

This study investigated the relationship between self-concept and students' academic performance in technical drawing in Edo State technical colleges using a correlational research design. One research question and one null hypothesis guided the study, the hypothesis was formulated and tested at .05 level of significance. The population of the study consisted of 834 technical drawing students from the five Edo State technical colleges. Purposive sampling technique was used to obtain a sample size of 322 from the total population and used for this study. Two research instruments: standardized technical drawing achievement test (TDAT), and Academic self-concept scale (ASCS) were used in this study. Standardized TDAT was adopted from the National Technical Certificate Examination past questions. Three experts in Technical Education and measurements and evaluation validated the instrument. Cronbach Alpha was used to determine the reliability coefficients of self-concept questionnaire which yielded the reliability coefficient values of .87. 303 copies of the instruments were duly completed, returned and used for data analysis. Pearson Product Moment Correlation Co-efficient (PPMCC) was used for data analyses to answer the research question and linear regression was used to test the hypothesis at .05 level of significance. Results revealed a high positive correlation and relationship between self-concept and students' academic performance in technical drawing in technical colleges in Edo State. Based on this finding, it was recommended that to create confidence in students and their ability to overcome academic problems and reach their desired academic goals, students should work to cultivate and develop positive beliefs about themselves and their self-worth, among others.

Keywords: *Academic Performance, Technical Drawing, Self-Concept.*

Introduction

Education has become an important issue as it is considered as one of the imperative or the development of essential skills, abilities and knowledge that help to improve the overall growth, progress and development of all individuals, community and nations. Individuals

who are educated are eager to succeed and achieve desired goals and objectives. Additionally, functional education can promote and contribute to community welfare and well-being (Dube & Mlotshwa, 2018). This implies that education is an agent of change and tool for national development.

In Nigeria, the structure of education includes universal basic education (that is, primary and junior secondary education combine), senior secondary education (including pre-technical and vocational education and training) and higher education. The Federal Republic of Nigeria (FRN) (2013) in her education policy document referred to Technical Vocational Education and Training (TVET) "...as a comprehensive term referring to those aspects of the educational process involving in addition to general education, the study of technologies and related sciences, the acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in various sectors of the economy and social life". The objectives of pre-TVET according to the FRN in her education policy document are to prepare students for the: (a) introduction into world of technology and appreciation of technology towards interest arousal and choice of vocation at the end of JSS and professionalism later in life; (b) acquisition of technical skills; (c) exposition of students to career awareness by exploring usable options in the world of work; and (d) enabler of youths to have an intelligent understanding of the increasing complexity of technology. These goals are pursued at the junior secondary school and technical college levels to inculcate a solid and lasting foundation of vocational skills so that students can secure employment at the end of their programme; set up their own businesses and become self-employed in order to be able to provide employment for others; and pursue further studies in advance programmes.

A close look at the above objectives reveals that the Government (both federal and state) recognizes the importance of TVET discipline for the acquisition of requisite skills, abilities and competencies that will enable individuals to live and contribute to the development of Nigeria. It is also responsible for the production of the skilled artisans, technicians, technologists, and craftsmen needed to positively turn the country's

economy around. TVET makes technological development easier, which is necessary for Nigeria to go from being a developing country to a developed nation and from a consumer nation to a producing nation. There are various trade subjects in TVET, the most important and common of all is technical drawing.

Technical drawing (T.D) is a crucial subject that pertains to the growth of technology in all countries, including Nigeria. As a result, it is a foundational subject in technological trades in technical colleges. Technical drawings, which include diagram, dimensions, and specifications, are useful tools for succinctly and clearly conveying all the information required to turn an idea into a reality. The National Board for Technical Education (NBTE) (2014) mandated that technical drawing should be taught as a trade-related subject at all technical colleges and be required of all students pursuing careers in engineering and construction. In order to stimulate students' interest in technology and reinforce a positive attitude towards entrepreneurship and national technological development, there is a need to recruit more competent and skilled technical drawing instructors who will help to stimulate students' personal characteristics, expose students to technical drawing activities during their three-year enrollment in technical colleges in Nigeria. The objectives of T.D include to: use and care for the different drawing instruments, equipment and materials; understand and interpret the essentials of graphical communication; illustrate the construction of simple geometric figures and shapes; demonstrates the construction of isometric drawing, oblique drawing and productions; understand the principles of orthographic projection; and explain the intersection of regular solid (NBTE, 2014). In other to achieve the goals of T.D, there is need for the development of personal characteristic of the student, in this study such characteristics is the students self-concept.

Self-concept is referred to as the image or perceptions that students hold about themselves which may include feelings, attitudes and knowledge about their abilities, skills and qualities (Ani & Ebe, 2017). The perception students have determined their self-concept which may be important for students' academic performance. Self-concept could be individuals' perception of their level of competence or ability within the academic realm. Self-concept is the term used to describe the way people think about and perceive themselves. It is the beliefs, perceptions, and judgments one has about one's own abilities, qualities, and characteristics. Self-concept is important because it influences a person's thoughts, feelings, and behaviors. The study conducted by Chamundeswari, et al (2014) found a significant correlation between self-concept, and academic achievement. Sikhwari (2014) investigated the relationship between motivation, self-concept and academic performance of university students. His results indicated that there was a significant correlation between motivation, self-concept and academic achievement in the sample of university students.

Self-concept is a complicated psychological construct that psychologists and educators must comprehend since it influences an individual's behavior, especially at school. To Jaiswal and Choudhuri (2017), self-concept is a set of personality traits based on self-awareness or experience. It comprises mental and intellectual grasp and devotion to one's knowledge and comprehension. Task completion, failure, success, and vocal performance, according to Amalu and Okon (2018), all affect an individual's judgment of their capacity to complete a task.

Tahir, et al (2023) carried out a study on relationship between self-concept and academic achievement. The study discovered a considerable positive association between academic self-concept and academic accomplishment. The findings also demonstrated a substantial positive relationship between social

self-concept and academic achievement, and regression analysis supported these conclusions. González-Nuevo, et al (2023). carried out a study to examine the progression of academic self-concept in relation to school performance for retained students and non-retained students. The findings have significant implications in relation to grade retention and its negative impact on students' academic self-concept. Abang (2021) conducted a study on the influence of self-concept on academic performance of secondary school students in mathematics in some selected public secondary schools in Calabar municipality Local Government Area, Cross River State, Nigeria. The findings were that self-concept significantly influence secondary school students' Mathematics academic achievement. Anierobi, et al (2022) carried out a study to determine the relationship among gender, academic self-concept and academic achievement of secondary school students. It was found that gender was not a significant factor in measuring students' academic self-concept. It also revealed that gender has no significant relation with students' academic achievement, while academic self-concept and academic achievement has a strong and positive correlation. The implementing of psycho-educational programmes, seminars and workshops to provide opportunities for students to express themselves and thus develop their self-esteem and self-confidence which will, in turn, positively impact their academic self-concept was recommended.

Amadi (2021) carried out a study to investigate the relationship between chemistry students' self-concept, study habit and academic achievement in secondary schools in Rivers State. Results of this study revealed a high positive relationship between chemistry students' self-concept and study habits with academic achievement respectively.

Academic performance is a foremost indicator as to whether the instruction is a process or it is the end result of teaching and learning process

(William & Shapiro, 2018). It is the extent to which the stated learning objectives have been achieved by the learners. Academic performance is the extent to which a learner, teacher or institution has achieved their educational goals. Students' academic performance is determined by some indicators such as scores or grade in examinations and continuous assessment. The success of technical drawing is measured by the scores or grades as depicted by the student's academic performance. This implies that student's academic performance in technical drawing serve as a yardstick for measuring the standard and quality of the course or subject. Academic performance proved the display of knowledge attained from skills that is done successfully using their own efforts and abilities developed in school subjects designated by test and examination scores or mark assigned by the subject's teacher. Various studies have been carried out on the factors that affect students' academic performance or achievement in schools, colleges and universities but none has been done as regard the relationship between student's self-concept and academic performance in technical drawing in Edo State technical colleges.

Statement of the Problem

Almost all the students in technical colleges in Nigeria seem to be performing poorly academically in technical drawing. To support this assumption, the NBTE (2022) posited that students' academic performance in technical drawing has been poor over the years. The analysis of students' results according to the NABTEB Chief examiner's report from 2015 to 2021 revealed that the percentage of failure is higher than the percentage of credit pass annually. This depicts a negative trend in the examination held in the year 2015, 2016, 2017, 2018, 2019, 2020 and 2021. This report stressed that the overall performance of students in technical drawing has been quite low with the highest mean scores of 41.5% in the year 2015, 37.8% in the year 2016, 42.5% in year 2017, 45.8% in the

year 2018, 40.7% in the year 2019, 28.7% in the year 2020 and 43.56% in the year 2021 respectively (NBTE, 2022).

The low level of academic performance of students in technical drawing in Nigeria revealed by the NBTE suggests that students in technical colleges are trained in un-resourceful and demotivated learning environment and as such exert low level of personal characteristics. Although, successive government through its agencies (for example, the Ministry of Education and the Post Primary Education Board) have devised a strategic means (for example, supervisory role) of ensuring that students are trained in a resourceful and motivating learning environment that would reinforce their personality characteristics which would, in turn, provide opportunity for them to better perform academically in technical drawing in technical colleges. Despite all efforts exerted and strategic means put in place by the successive government to surmount this precarious situation, students still perform poorly academically in technical drawing in technical colleges in Edo State.

Therefore, the problem of this study is that almost all the students in technical colleges in Edo State appear to be performing poorly in technical drawing academically, which may be attributed to their exertion of personal characteristics (such as, self-concepts). It is on this premise that the researcher decided to provide an empirical data on the extent to which students' self-concepts correlates with academic performance in technical drawing in technical colleges in Edo State.

Purpose of the Study

The purpose of the study was to investigate the extent to which students' self-concepts correlates with academic performance in technical drawing in Edo State technical colleges. Specifically, the purpose of this study was to: ascertain the relationship between self-concept and students'

academic performance in technical drawing in Edo State technical colleges.

Method of Study

A correlational research design was used to achieve the specific purpose of the study. The research investigates the relationship between self-concept and students' academic performance in technical drawing in technical colleges in Edo State. This type of design involves collecting data to determine whether and to what degree, a relationship exists between two or more quantifiable variables. The population of the study consisted of 834 technical drawing students in engineering and construction trade from the five technical colleges in Edo State. Using purposive sampling Techniques, 322 Tech II students were used for the study because Tech III students were preparing for external examinations and Tech I were still an introduction class. The instruments used for the study were standardized technical drawing achievement test (TDAT), and Academic self-concept Scale (ASCS). Technical drawing achievement test (TDAT), was adopted from National Technical Certificate Examination past questions, based on the topics that the students have been taught. 40 objectives questions for (TDAT) were drawn from NABTEB past questions. The ASCS was adapted from a 20 items self-report questionnaire from Liu, et al (2005). These questions were administered to Tech II Students in engineering and construction trade in the five technical colleges in Edo State. It was divided into section A, B, and C. Section A deals with the personal data of the respondents, section B deals with objectives questions on technical drawing achievement test (TDAT), and section C deals with Academic self-concept scale (ASCS). In section B, the respondents supplied the correct answer provided from option A to E in TDAT, 2 marks each for every correct option and 0 marks

for every wrong option. A total score of 70-80 were regarded as Strong Agreed (SA), 50-68 as Agreed (A), 40-49 as Undecided (UD), 30-44 Disagreed (D) and 0-28 Strongly Disagreed (SD). In section C, Respondents were provided with response option in a four-point scale from which they were required to choose only one option. Strongly Agree (SA) - 5 points, Agree (A) 4 points, Undecided (UD) 3 point, Disagree (D) 2 points, Strongly Disagree (SD) 1 point, the bench mark for these section were 3.00.

The instrument on (TDAT) was a standardized instruments and as such does not need any validation, however the instrument for (ASCS) was validated by three research experts, two in Vocational and Technical Education Department of Ambrose Alli University, (AAU) Ekpoma and one from Measurement and Evaluation Department, University of Benin (UNIBEN), both from Edo State. The corrections were incorporated in the final questionnaire. To measure the internal consistency of the instruments, the split half reliability technique was employed. The technique was carried out by administering copies of the instruments to a group of 20 respondents (Tech II students in engineering and construction trade) from Technical Colleges in Asaba, Delta State which is not part of the target sample. In carrying out the split-half reliability techniques, copies of the instruments were distributed to 20 respondents on the pilot study. The data retrieved from them were collated and the items split into two equal halves of odd and even numbers. The Pearson Product Moment Correlation Coefficient was used in establishing the relationship between both responses and it yielded a coefficient of .87. This reliability coefficient is adjudged as high. Pearson Product Moment Correlation coefficient (PPMCC) was used to answer the research question and simple linear regression was used to test the hypothesis at .05 level of significance. The null hypothesis is rejected if the P-value is less than .05 and accepted if the p-value is

greater than .05.

Results

Research Question 1: What is the relationship between self-concept and students' academic performance in technical drawing?

Table 1: Correlations between Self-concept and Students' Academic Performance in Technical Drawing

Variables	M	SD	N	Pearson r	p-value	Remark
Self-Concept	4.13	.213	303	.791	.000	High Correlation
Performance	3.91	.191				

$p < .05$.

Table 1 revealed that there was a high and positive correlation ($r = .791$) between self-concept and students' achievement in technical drawing. This positive correlation ($r = .791$) indicated that there is a direct relationship between self-concept and students' performance in technical drawings. To this end,

as students' self-concept improves, the student academic performance in technical drawing also improves.

Research Hypothesis 1: There is no significant relationship between self-concept and students' academic performance in technical drawing.

Table 2: Linear Regression on the Relationship between Self-concept and Students' Academic Performance in Technical Drawing

Self – concept → students' academic performance						
R/β	R ²	Adj.R ²	F	T	P <	Decision
.826	.721	.542	321.114	12.240	.001	Sig

Note Sig – Significant, Adj.- adjusted.

Data presented in Table 2 revealed that the correlation ($r = .826$) between self-concept and students' academic achievement in technical drawing is high and positive. These results showed that increase in self-concept will lead to improved students' academic performance in technical drawing. For the test of the hypothesis, the table revealed that the role of self-concept on students' academic performance in technical drawing is significant ($F = 321.114$, $t = 12.240$, $\beta = .826$, $P < .001$). The hypothesis that there is no significant relationship between self-concept and students' academic performance in technical drawing was therefore rejected.

Discussion of Findings

Table 1 demonstrated a strong, favorable, and statistically significant correlation between the students' academic achievement in technical drawing test and their self-concept. This indicates that students' academic success in technical drawing test grows in tandem with their growth in self-concept. Many academics agreed that children with good self-concepts are far more likely than those with negative ones to develop positive attitudes toward learning and education. Meanwhile, students with negative

self-concepts are the reverse. This is consistent with the research done by Amadi (2021), who examined the connection between students' academic success in chemistry at River State University and their study habits and self-concept. This research included the result that students' academic achievement and their self-concept were positively correlated. Anierobi, et al (2022) carried out a study to determine the relationship among gender, academic self-concept and academic achievement of secondary school students. It was found that gender was not a significant factor in measuring students' academic self-concept. The results of this study are also consistent with those of Abang (2021) carried a study to investigate influence of self-concept on academic performance of secondary school students' in Mathematics in some selected public secondary schools in Calabar Municipality Local Government Area, Cross River State, Nigeria. The findings were that self-concept significantly influence secondary school students' Mathematics academic achievement. Tahir, et al (2023) carried out a study on relationship between self-concept and academic achievement. The study discovered a considerable positive association between academic self-concept and academic accomplishment. The findings also demonstrated a substantial positive relationship between social self-concept and academic achievement, and regression analysis supported these conclusions.

Furthermore, the results of this study are consistent with those of the study conducted by Chamundeswari, et al (2014) that found a significant correlation between self-concept, and academic achievement. Sikhwari (2014) investigated the relationship between motivation, self-concept and academic performance of university students. His results indicated that there was a significant correlation between motivation, self-concept and academic achievement in the sample of university students.

Conclusion and Recommendations

The relationship between students' academic performance and their self-concept in technical drawing in Edo State Technical Colleges has been demonstrated by the study. In Edo State technical Colleges, it was shown that students' academic achievement in technical drawing tasks had a strong and favorable correlation with their self-concept.

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

1. In order to create confidence in students and their ability to overcome academic problems and reach their desired academic goals, students should work to cultivate and develop positive beliefs about themselves and their self-worth.
2. In order for students to develop improved self-concept, school management, teachers and parents should equip the library with motivational books for the students to read.
3. In order for students to develop improved self-concept, motivational speech should be encouraged on the assembly ground in school and also be given to students by parents at home at regular interval.
4. All school should encourage employing the services of a school counsellor to counsel students with low self- esteem.

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