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Gender Effect on Students' Academic Performance in Block-laying and Concrete Works in Technical Colleges in Edo State

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ABSTRACT

This study examined the gender effect on students' academic performance in block-laying and concrete works in technical colleges in Edo State. One research question was raised to guide the study and one hypothesis formulated and tested at 0.05 level of significance. No sampling technique used, due to the manageable size of the population. The research instrument was subjected to test-retest reliability test technique. The reliability coefficient was calculated using Cronbach-Alpha coefficient which yielded reliability value of 0.64. The data collected were analyzed using Mean and Standard Deviation and t-test. Mean and standard deviation were used to analyze the research question and t-test was used to test the hypothesis at 0.05 level of significance. The results of the study showed that although the male students had slightly better performance compared to the female students, it was not significant. Based on the findings of this study, it was recommended that Parents are encouraged to provide the right education they can afford for their children irrespective of gender. Also, there should be a deliberate Federal Government policy to encourage absorbance of female students into further studies in block-laying and concrete works.

Keywords: Education, gender, students' performance, technical colleges

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INTRODUCTION

Global policy priorities on education are centred on equity and fairness in accessing education. Several efforts made, particularly in developing and low-income countries appear not to have yielded the expected results. For example, children with disabilities are especially at a disadvantage in terms of school enrollment, educational attainment, and learning in developing countries (Wodon et al., 2018). In Cambodia, Colombia, Gambia, Maldives, and Uganda, only 56% of children with disabilities (CWDs) complete primary education, in contrast to 74% of

their peers without disabilities (World Bank, Inclusion International, Leonard Cheshire, 2019), while the transition to secondary education poses a significant challenge for individuals with disabilities in Africa (UNESCO & Global Education Monitoring Report 2020). Furthermore, within the Nigerian context, children with impairments constitute over 50% of Nigeria's 10.5 million out-of-school children (The IREDE Foundation, 2021).

Despite Nigeria's policies in promoting the inclusion of children with special needs in mainstream classrooms, research indicates that the implementation of these policies has been hindered over the years. For instance, researchers have observed that students with special needs face discrimination at all educational levels (Nwosu et al., 2024; Nwosu & Ementa, 2018). There is widespread agreement that teacher professional development is crucial to the effective implementation of inclusive education (European Agency for Development in Special Needs Education, 2012; Nwosu et al., 2020; Nwosu et al., in press) since teacher quality has been found to be the most important within-school factor affecting student learning outcome (European Agency for Development in Special Needs Education, 2012).

One of the stages in the training of teachers in which attempts are made to bridge the gap between theory and practice is during the teaching practice exercise. This is a compulsory aspect of the teacher training programme that offers preservice teachers the opportunity to put in practice all the theories and contents they have been exposed to in their institutions. Given that this may be the first time many of them may be teaching students in a formal classroom setting, they may face a number of challenges especially with regards to students with special needs. Pre-service teachers are students undergoing formal training and education to become professional teachers who are yet to be certified as teachers and assume teaching positions in any recognizable educational institution. To consolidate their training, they are placed on a teaching practice exercise to provide them with practical experience. Researchers (Imsa-ard et al., 2021; Mapinda & Honori, 2022) have found that preservice teachers face several challenges including poor school infrastructure, strained relationship with host teachers, low confidence explaining lessons and providing feedback to students; and difficulty teaching mixed-ability classes. Consequently, Mbhiza et al. (2024) and Shumba et al. (2012) have stressed the need to offer mentorship to preservice teachers during their practicum. However, some researchers have noted that preservice teachers may not be getting adequate support they need during the teaching practice exercise (Maddamsetti, 2018; Mbhiza et al., 2024; Mlyakado & Mwandambo, 2023). This is likely to exacerbate the challenges of these students particularly in situations where they are supposed to handle students with special needs. Given that the Nigerian educational system recognizes inclusive education, teachers are expected to maximize the potential of all learners by modifying the curriculum and pedagogy to meet individual learning needs. Yet, there is dearth of research on the inclusive education challenges of preservice teachers especially those trained in Education is the pivot on which all students' activities rotate. Education is generally seen as a form of learning in which the understanding, ability, morals beliefs and habit of a group of people are transferred from one generation to another through various methods like storytelling, discussion, teaching, field trip, project, training, excursion, and research work. Education may also include informal communication of ideas from one person to another which frequently take place under the guidance of others. However, one cannot be educated without teaching and learning. Hence, the method of teaching will determine the learners' outcome or performance.

Performance is the degree to which an individual understands a learned concept which either could be positive or negative. When this happens in a formal setting (school) it is call student performance. According to Oviawe et al (2021), students' performance can be improved upon through strategies. This can be characterized by test associated with coursework,

continuous assessments, project work and other type of examinations. This may not necessarily be affected or determined by the gender or sex of the student.

Gender is a spectrum of anatomical, biological, mental, and behavioral traits that relate to and distinguish between feminist and masculine identities. It is the identity of being intersex, masculine, or female. Globally, gender issues are currently the main topic of conversation and investigation. Gender issues are highly significant, particularly for students, who are particularly concerned about the respective contributions of men and women to national economies. In the meantime, over time, testing for technical college courses has drawn significant interest due to worries regarding students' performance concerning gender. Iji et al, (2015), identified gender as one of the factors that affect students' performance. Daniella, and Fultcher (2014), observed that the more masculine appearances that a young adult look, the more they are concerned with masculine career such as engineering or mechanic and the less concerned to feminine career such as teacher or social worker. Hence, Block-laying and concrete works may be seen as masculine career.

Block-laying and concrete works (BCW) is the study of acquisitions of block-laying and concrete works skills that is performed during the construction of both commercial and residential buildings and maintenance. Block-laying and concrete works (BCW) is one of the vocational or career courses been offered in technical colleges. According to Okoro (2016), technical colleges are the principal vocational institutions in Nigeria, which gives full vocational training intended to prepare graduate for entry into various occupation such as Carpentry and Joinery, Block-laying and concrete works, Auto-mechanics, Metal work, Electrical and Electronics amongst others. All certificates are awarded by the National Business and Technical Examinations Board (NABTEB).

Uwameiye (2010), opined that vocational education prepares youths for employment in industries, commerce and other enterprises by revealing them to practice that offers manipulative, cognitive and altitudinal skills that makes them qualify for it. According to Oguntitinyi (2013), in Osuyi and Mochi (2022), vocational education plays a major role at promoting community and national development. Vocational education is offered in technical colleges leading to the award of National Technical Certificate (NTC) and Advanced National Technical Certificate (ANTC).

According to the National Board for Technical Education (NBTE, 2018), the objectives that guide the teaching and learning of BCW in technical colleges in Nigeria include to;

- Provide technical training to meet the demand of woodwork industries and individuals by allowing the students to identify their career objectives.
- Prepare an individual with job satisfying skills towards employment and self-reliance.
- Prepare students to acquire entry level knowledge and manipulative skills for employment in technical industries.

Despite how admirable these goals are, there appears to be a gender gap in technical colleges when it comes to achieving them because BCW is practically focused. In order to achieve these goals, gender effects must be taken into account. Specifically, gender interest in learning BCW should be fully embraced in order to improve students' behavior, learning rate, practical skills, confidence, and performance in block-laying and concrete works in technical colleges.

Statement of the Problem

In Nigeria, the trend of academic excellence of technical students at „O" level has shown that boys perform better than girls in Block-laying and concrete works examination (NABTEB 2003). Block-laying and concrete works being one of the essential technical subjects in most of the professional subjects technical colleges level, experience poor performance by the girls, and

thus limit their opportunity to offer professional courses like building, building technology, building construction, civil engineering, structural engineering, architectural and engineering in higher institutions. The low rate of female enrolment is accompanied by decrease in achievement and interest. Poor performance in Block-laying and concrete works which potentially contributes to lowering girls' interest in the subjects reduces the female in technological carriers in Nigeria where we are currently in need of highly skilled labour for economic development. Iji et al, (2015) identified gender as one of the factors that affect students' performance. Oyenuga, (2010) showed difference in students' performance in vocational trade subjects in secondary school as a result of gender. Also, a number of studies have been done on issues about effect of gender and performance in core science subjects like biology, chemistry and physics where females perform better in the first two subjects and males in the last. Clear evidence has not been established whether there is a gender effect in block-laying and concrete works in technical colleges in Edo State. Based on the foregoing, therefore, the study seeks to determine the gender effect in Block-laying and concrete works in technical colleges in Edo State.

Purpose of the Study

The purpose of the study is to determine gender effect on students' academic performance in block-laying and concrete works in Technical Colleges in Edo State. Specifically, the purpose of the study is to:

- Determine whether differences exist in the male and female students' academic performance in Block-laying and concrete works in technical colleges in Edo State.

Research Question

The research question below was raised to guide the study;

- Is there any difference in male and female students' academic performance in block-laying and concrete works in technical colleges in Edo State?

Hypothesis

The hypothesis below was formulated and tested at 0.05 level of significance;

Ho: There is no significance difference in male and female students' academic performance in block-laying and concrete works in technical colleges in Edo State.

METHODS

This study is centered on technical colleges in Edo State, Nigeria. The expo-facto research design was used since there is no special treatment given to the subjects and there is no control group.

The population of the study comprised all the 89 (68 male and 21 female) Vocational II BCW students in the six (6) Technical Colleges in Edo State. Voc. II students are used for the study because Voc. III students are preparing for external examination and Voc. 1 is still an introduction class. There was no sampling technique used, due to the small and manageable size of the population. The instrument for the study was titled; Block-laying and Concrete Works Achievement Test (BCWAT) developed by the researcher. The instrument contained 35 multiple choice items. Items in the instrument were drawn from the topics in BCW as specified in the NABTEB curriculum for Voc. II in technical colleges.

In order to determine the validity of the instrument, the instrument was subjected to face and content validity by three experts. Two of them are from the department of Vocational and Technical Education, Faculty of Education, Ambrose Alli University Ekpoma, and one from the department of Measurement and Evaluation, University of Benin (UNIBEN) both of Edo State. The experts were requested to assess the items in terms of appropriateness in addressing the problem of the students and research question under investigation. Their suggestions and

recommendations were in cooperated in the final draft of the instrument, and to determine the reliability of the instrument, the scores of 54 Voc. II BCW students in technical colleges in Delta State was used, who were not part of the study sample on two different occasions. The instrument was subjected to test-retest reliability test technique. The reliability coefficient was calculated using Cronbach's Alpha and the reliability coefficient of 0.64 was obtained for BCWAT instrument.

TABLE 1

Distribution of respondents according to sex

		Frequency	Percent	Valid Percent
Valid	Male	68	57.1	57.1
	Female	21	42.9	42.9
	Total	89	100.0	100.0

Table 1 shows that 57.1% of the respondents (students) are males while the remaining 42.9% are females; this shows approximately even distribution of the students' gender.

RESEARCH RESULTS

Research Question

Is there any difference in male and female students' academic performance in block-laying and concrete works in technical colleges in Edo State?

Table 2

Descriptive statistics of the gender based academic performances of the entire students

	Mean		Standard Deviation	
Gender	N Male	Female	Male	Female
Score	891.43	26.1	0.482	4.33

Table 2 Presents the students' responses on gender and academic performance. This analysis was revealed from the value of scores which are shown by the mean and standard deviation of the students. The obtained responses on academic performance for male students show the mean of 1.43 and the female students 26.1 and standard deviation of 0.482 for male and 4.33 for female with N 89. Male students possess higher performance than female students.

Hypothesis

Ho: There is no significance difference in male and female students' academic performance in block-laying and concrete works in technical colleges in Edo State.

Table 3

t-Test of the gender based academic performances of the entire students

	Sex	**N**	**x̄**	**SD**	**Df**	**t-value**	**p-value**
Score (%)	Male	68	30.30	4.170	87	3.33	0.6701
	Female	21	27.04	4.523			

Table 3. Shows gender effect in students' academic performance in block-laying and concrete works in technical colleges in Edo State. The analysis revealed a mean (x̄) of 30.30 and Standard Deviation (SD) of 4.170 with degree of freedom (df) of 87 and (N) 68 for male

students, a mean ($\bar{x}$) of 27.04 and Standard Deviation (SD) of 4.523 with degree of freedom (df) of 87 and N 21 for female students. The observed t value of 3.33 compared with p- value of 0.6701, the results indicated that no significant differences exist between gender and Academic performance in block-laying and concrete works in technical colleges in Edo State, in favour of female students therefore, the null hypothesis was accepted.

DISCUSSION

In testing the hypothesis which stated that there is no significance difference in male and female students' academic performance in block-laying and concrete works in technical colleges in Edo State. The analysis revealed a mean ($\bar{x}$) of 30.30 and Standard Deviation (SD) of 4.170 with degree of freedom (df) of 87 and (N) 68 for male students, a mean ($\bar{x}$) of 27.04 and Standard Deviation (SD) of 4.523 with degree of freedom (df) of 87 and N 21 for female students. The observed t value of 3.33 compared with p- value of 0.6701, the results indicated that no significant differences exist between gender and academic performance in performance in block-laying and concrete works in technical colleges in Edo State. In favour of female students therefore, the null hypothesis was accepted.

This explains why the male students' performance levels are not statistically significant: the male student sets that performed well and poorly were most likely caused by specific circumstances. This result agrees with the findings of Dania (2014) that students' performance is not determined by gender in terms of the interaction of gender and treatment on students' academic performance.

Conclusion

Based upon the findings of this study, it was concluded that there is significant difference in students' academic performance in block-laying and concrete works in and technical colleges in Edo State. This implies that there are no longer distinguishing cognitive, affective and psychomotor skill achievements of students in respect of gender. The female achievements scores in the administered test were even slightly better compared to their male colleagues in technical colleges even though without significant difference.

Recommendations

In view of the findings in this study, the following recommendations were made.

i. Female students should be admonished to approach every subject without inferiority complex to the male students.
ii. Parents are encouraged to provide the right education they can afford for their children irrespective of gender.
iii. There should be a deliberate Federal Government policy to encourage absorbance of female students into further study in computer science.

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