



EFFECTS OF TESTWISENESS STRATEGY ON THE ACADEMIC PERFORMANCE OF SENIOR SECONDARY SCHOOL STUDENTS IN ECONOMICS IN OYO STATE, NIGERIA

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ABSTRACT

This study under seeks the effects of testwiseness strategy on the academic performance of senior secondary school students in Economics in Oyo State, Nigeria. The study employed a pretest, posttest and control group quasi-experimental design. The population of the study comprised all the public senior secondary school II (SSS2) students offering Economics in Oyo State, Nigeria. A sample of 240 SSS II students was used for the study using a multistage sampling procedure. The instruments used in the study were Economics Achievement Test (EAT) and Testwiseness Questionnaire (TQ). The face and content validity of the instruments was ascertained by expert judgment. The reliability coefficient of EAT was estimated using the test re-test reliability method while the reliability coefficient of TQ was estimated using the Cronbach Alpha reliability method. The reliability coefficients of EAT and TQ were 0.79 and 0.82 respectively. Data collected were analysed using descriptive and inferential statistics. The research questions raised were answered using mean, standard deviation and bar chart while the hypotheses formulated were tested using Student's t-test and Analysis of Covariance (ANCOVA) at a 0.05 level of significance. Results of the study show that there was a significant difference in the performance of students exposed to testwisness strategy and those in the control group. Also, the results show that there was no significant effect of the testwisness strategy on the performance of the students based on gender and school location. It was, therefore, concluded that students exposed to the testwisness strategy performed more than those not exposed to the testwisness strategy and that gender and school location have no significant interactive effect on the student's achievement in Economics when exposed to the testwisness strategy. It was recommended that students should be exposed to testwisness strategy to improve their performance in Economics irrespective of their gender and school location.

Keywords: *Academic Performance, Economics, Gender, School Location, Strategy, Testwiseness*

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INTRODUCTION

The importance of the knowledge of economics in the economic development of any nation cannot be over-emphasized. Bitrus, Dornak and Hannatu (2016) posited that economics as a subject has various values to the learners that connect learners to the necessary ingredients of everyday life economic realities. Dutuma (2014) stated that economics prepares one to deal with issues in various fields which include; business, law, and accounting among others. Knowledge of economics is necessary to study management science and social sciences in higher institutions of learning, students who fail the subject will not be able to study economics-related courses.

Knowledge of economics is necessary for individual and nation building, it helps to take decisions out of several alternatives, therefore, it helps individuals and organisations to make a wise choices that will satisfy their needs among unlimited wants within scarce resources.

Despite the significance of economics, the performance of secondary school students in the subject especially in external examinations is not encouraging. West Africa Examination Council (WAEC) 2018 examiner's report stated that candidates' performance in economics was lower than in the former year. In Oyo state, Nigeria the percentage of students who have credits in economics in 2010 and 2011 are below 25% while little progress was made in the year 2012 and 2013 but still below 45% while in the year 2014 to 2016 the performance is below 30%. In recent years the performance has not shown considerable improvement, for instance in 2018, 2019 and 2020 the percentage of the students who passed the subject at credit level were 49.63%, 47.18% and 33.90% respectively (Oyo State Ministry of Education, 2022).

The above statistics of the performance of the students in the subject for years is not auspicious and the implication is that students that will study economics in tertiary institutions of learning will be very low and consequently, manpower and professionals in the economics related fields of study will reduce despite the prominence of economics knowledge in nation's building.

The causes of poor performance in the subject include the school environment factor, home factor and student-related factors (Ali, 2013). Despite the efforts of researchers and educational stakeholders in ameliorating the students' poor performance in Economics, their performance is not yet encouraging. Ononye and Obiakor (2020) reported that despite the importance of teaching and learning economics, the performance of students in the subject in secondary schools has remained an issue of concern to all stakeholders.

As stated above, many factors could cause students' poor achievement in the subject, in this study, researchers have identified a student factor with students' testwiseness as one of the major problems that could cause students' poor performance in the subject.

Testwiseness is the testee's ability to utilise the characteristics and format of a test to receive a high score. One thing is for a testee to have a good knowledge of the subject matter, another thing is to have test-taking strategies that could assist the testee to perform well in the examination. Testwiseness is the capacity to utilise the characteristics and format of a test or the test-taking situation to receive a high score. Skills that fall under testwiseness include; the careful reading of instructions and directions, the wise use of time and the ability to select among alternative options in a given test among others.

According to Roberson (2020), in a multiple choice test, a student may attempt to use background knowledge and testwiseness strategies to help eliminate incorrect options or determine the likelihood of any options being correct or incorrect. Dolly and Williams in Abedalqader, Hisham, Abedalqader and Hassan (2015) posited that testwiseness is the ability of the testees to perform better on a multiple choice test despite the content being tested. From the definitions given above, testwiseness could be referred to as the skills or strategies the testees possess which is different from skills that the test is planned to measure but could affect his/her performance. Testwiseness strategies could include; time-using strategy, error-avoidance strategy, and guessing strategy among others. Igwe and Orluwene (2019) reported that students should not only prepare for examinations based on the content or subject matter knowledge but should also consider equipping themselves with proper and adequate test-taking strategies. Thomas and Koller(2018) described testwiseness as an important factor influencing the outcome of multiple-choice tests and that testees with testwiseness strategies get better achievement in a multiple-choice test than testees without the strategy. Also, Cohen in Bumbalkova (2021) defines testwiseness strategy as using knowledge of test formats and other information to obtain possibly correct responses thereby increasing the academic achievement of the testees

Academic success in school can be referred to as the student's success in learning specific curriculum contents as may be revealed by some assessments and examinations at the end of which a certificate is drawn up as the reference of performance for running through a programme of the institution. Ali (2013) posited that academic performance measures the level at which a specific task in an area of study has been achieved by students at the end of the learning experience. It shows how a student (or a group of students) is doing academically. He further stated that a high academic success for any class of student is a sign of teaching or learning effectiveness and vice versa, locating the brilliant student from the average student and weak ones, identifying the students base on their interests, gender, classroom interaction and school location. Moreover, students' academic success seems not to be encouraging recently and Economics as a subject is not an exception. There are a lot of factors militating against their performance.

Furthermore, to measure the academic progress of the learners, there is a need to assess such learners through a test. In as much that testing brings out observation and assessment of specific attributes such as abilities, knowledge, skills, or feeling of a person individually or in a group. The test is used for classification, diagnosing, certification, and grouping of the learners for selection and promotion (Kolawole, 2011). Achievement tests are considered to be the most important measurement tool used by the teacher to evaluate the student's academic performance and this has a prominent role in the life of the student, especially in the domain of decisions of the individual level for the future of students (Odeh 2010). However, it has been noticed that the majority of students do not possess the testwiseness attributes required of them.

School Location in academic performance plays a significant role, it is one of the potent factors that influence the distribution of educational resources (Owoeye, 2000). Students' gender differences could influence testwiseness. Mars and Sigler (2012) did a comparison study strategies, they established that female students tended to employ a "deep approach" to learning which involved engaging in the material at a deeper level, whereas male students tended to utilize a "surface approach" which involved tasks requiring minimal effort. Test-taking (Testwiseness) strategies discovered a few relatively small differences between male and female test takers.

Because of the above, this study looked into the effects of testwiseness on the student's performance in economics. The study, as well, examined the effects of testwiseness on students' performance in the subject as related to gender and school location

Statement of the Problem

Despite the numerous importance of economics towards individual and nation building, the poor academic performance of students in economics in both internal and external examinations calls for the necessary attention. Educational stakeholders have embarked on numerous efforts and researches on how to ameliorate the poor performance of the students in the subject but it seems the problem persists. Ononye and Obiakor (2020) posited that despite the importance attached to teaching and learning economics, the performance of secondary school students in the subject remains an issue of concern to all stakeholders. Many factors have been identified as the reasons for the discouraging performance of the students in the subject which include; the student factor, government factor, and home factor among others but it seems the issue on the effects of testwiseness strategy as it affects students' performance in the subject has not been adequately examined.

Because of this, the study examined the effects of testwiseness on the academic performance of students in the subject to know how the testwiseness strategy of students could improve their performance in the subject.

Research Justification

Equipping the students with testwiseness strategies would reveal the effects of the strategy on the student's performance in the subject by comparing them with those without testwiseness strategy

Objectives

The objectives of this study were to underseek the effect of testwiseness on the academic performance of Senior Secondary School Students in Economics in Oyo State, Nigeria. The study, therefore, looked into the:

- i. effect of testwiseness strategy on achievement in Economics of students exposed to testwiseness strategy.
- ii. interaction effect of gender on the academic achievement of students exposed to testwiseness strategy.
- iii. interaction effects of students' school location on the academic achievement of students exposed to testwiseness strategy.

Research Questions

The following research question was raised for the study

1. What are the pre-test and post-test mean scores of economics students exposed to testwiseness strategy?

Research Hypotheses

The following null hypotheses were postulated and tested at a 0.05 level of significance

HO1: There is no significant difference between the pre-test and post-test mean scores of Economics students exposed to testwiseness strategy and students in the control group.

HO2: There is no significant interactive effect of gender on the academic performance of Economics students exposed to testwiseness strategy.

HO3: There is no significant interactive effect of school location on the academic performance of students exposed to testwiseness strategy.

METHODOLOGY

Research Design

This study adopted a pre-test, Post-test, control group quasi-experimental design. The design was suitable for the study because intact classes were used and were randomly assigned to both treatment and control groups. The baseline of the knowledge of students used for the study was established by pre-test while post-test after the treatment was used to measure learning outcomes. One group was assigned to treatment and one control group responded to the pre-test and post-test. The pattern of the design is shown below.

$O_1 \times O_2$ Experimental group (Testwiseness strategy)

$O_3 - O_4$ Control group

Where

O_1, O_3 - Pre-test (Performance before treatment)

O_2, O_4 - Post-test (Performance after treatment)

X - treatment via testwiseness strategy

- Control group (no treatment)

The population for the study consisted of all the 50,006 Senior Secondary School (S.S.S) II students offering Economics in public Secondary Schools in Oyo State (Source: Oyo State Ministry of Education, Department of Planning, Research and Statistics). The choice of Senior Secondary School II students was considered more appropriate because they had been exposed to some basic concepts in Economics. The sample for the study consisted of 240 students offering Economics drawn from six public Senior Secondary Schools in Six Local Government Areas of Oyo State using a multistage sampling procedure. In the first stage, 2 local government areas were selected from each of the three senatorial districts in Oyo State using a stratified sampling technique. In the second stage, one school offering economics was selected from each of the sampled local government areas using purposive and simple random sampling techniques. In the third stage, 3 schools were randomly selected as the experimental group while the other 3 schools were used as the control group. The intact classes of the sampled schools were used for the study which comprised 30, 40, 20, 50, 60 and 40 students.

Two instruments titled Economics Achievement Test (EAT) and Testwiseness Questionnaire (TW) were used to collect data for this study. EAT instrument was divided into two sub-sections A and B. Section A reflects personal data from the respondents with their school, class, sex, and school location. Section B comprised 40 multiple choice items in Economics adopted from the Oyo State Ministry of Education and Technology, Joint Promotion Examination which covered all topics in Senior Secondary School Two (SSS 2) syllabus. Each item comprises 4 - options. The second instrument (TQ) comprised 20 items on Testwiseness strategy on a 4 - point Likert type scale that is; Strongly Agree (4), Agree (3), Disagree (2), Strongly Disagree (1).

The face validity and content validity of the instruments EAT and TQ were established by giving the instruments to experts in Tests and Measurements with Economics backgrounds and senior secondary school Economics teachers. Judgment from the experts was used to determine the face and content validity of the instruments. The experts examined the items that were presented on EAT and Testwiseness Questionnaire (TQ). After Scrutiny, some items were dropped and replaced with others that were more relevant while others were modified especially questions on TQ. The experts agreed that the items and the build of the questionnaire have facial relevance and

acceptability to use what they claim to be measuring. For content validity, they agreed that the items would adequately measure the performance of the students since it was adopted from the Oyo State Ministry of Education and Technology, Joint Promotion Examination which covered all topics in the SS2 syllabus. Economics Achievement Test (EAT) was administered on 20 respondents in one of the schools outside the study area. After two weeks, the instrument was re-administered on the same respondents, and the data collected were collated and analyzed using the Pearson Product Moment correlation which yielded a reliability coefficient of 0.79. Also, the Cronbach Alpha reliability method was used to estimate the reliability co-efficient of TQ which was 0.78.

Experimental Procedures

The experimental procedures include the identification and training of Economics teachers in the sampled schools who were used as research assistants both in the experimental group and control group. This helped to avoid class disruption, and reduce or eliminate the Hawthorne effect (i.e. participants reacting to the fact that they are part of an experiment) rather than the treatment per se. The experiment lasted for seven weeks, out of which one week was spent for the training of teachers (research assistants) one week for pre-test, four weeks for treatment, and the last one week for post-test. The treatment was administered to the participants for four weeks during the school's regular lesson periods.

The testwiseness strategy package was used by the research assistants in all the sampled schools but monitored by the researchers. Thus, it could be assumed that instruction variance was minimal.

The procedure was in three steps as follows:

Step 1: Pre-treatment stage

The researchers administered a pre-test on students in economics intact class to determine the level of their performance. The instruments used were Economics Achievement Test (EAT) and Testwiseness Questionnaire (TQ). The students were divided into two groups (The experimental group and the control group) using intact classes in the sampled schools

Step II:- Treatment stage

The experimental group was exposed to the testwiseness strategy package. Students in the experimental group were exposed to four (4) weeks of training which would make them testwise. The package was prepared to include the strategies of testwiseness which include: how to prepare for the test, test format, and time management, followed by guided practice questions.

Step III: Post-treatment Assessment

At the end of the treatments programme, EAT and TQ were administered to the students in the experimental and control group to determine the effects of the treatment on the groups. The same Economics Achievement Test (EAT) was used for the post-test but options were interchanged.

Data Analysis

The data generated were analyzed using descriptive and inferential statistics. The research questions were answered using mean, standard deviation and bar chart. Hypotheses were tested using analysis of Covariance (ANCOVA). All the hypotheses were tested at a 0.05 level of significance.

RESULTS

Descriptive Analysis

Question 1: What are the pre-test and post-test mean scores of economics students exposed to testwiseness strategy?

Table 1: Mean and standard deviation of pre-test and post-test scores of students exposed to testwiseness strategy and conventional method

Groups	Test	N	Mean(\bar{X})	S.D	Mean Diff.
Testwiseness	Pre Test	120	11.69	0.85	23.10
	Post Test	120	34.79	1.01	
Conventional	Pre Test	120	11.78	1.02	9.00
	Post Test	120	20.78	1.24	
Total		240			

Table 1 shows that the mean difference in students' performance in Economics between pre-test and post-test scores for the testwiseness strategy group is 23.10, and the conventional group is 9.0. It appears that the use of the testwiseness strategy influences students' performance in Economics more than the conventional method.

Figure 1 below further shows the pre-test and post-test scores of students in the two groups.

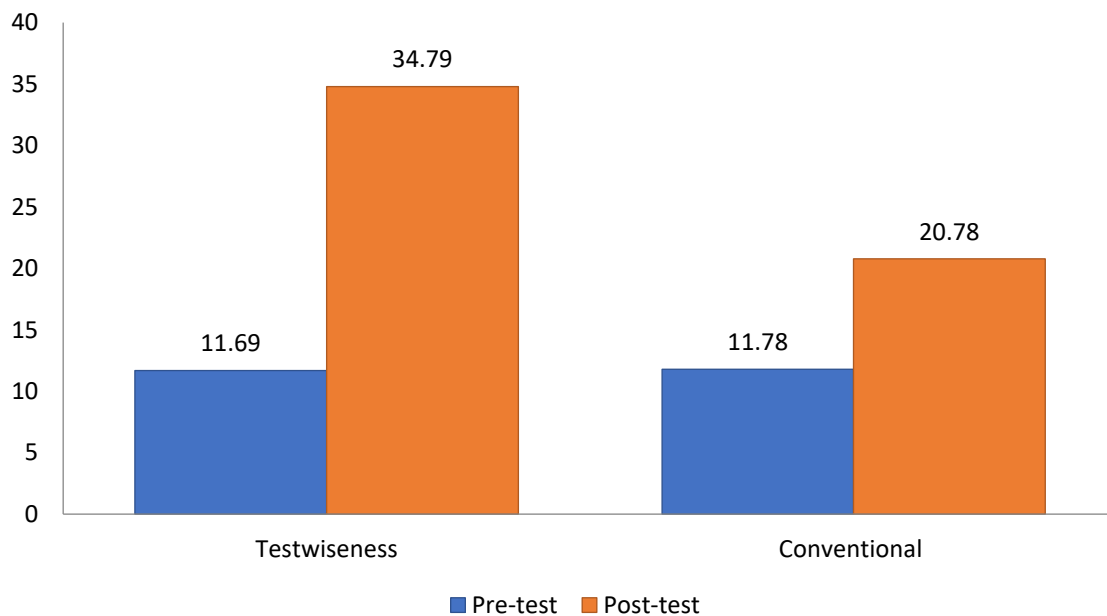


Figure 1: Bar Chart showing Pre-test and post-test scores of students exposed to testwiseness strategy and conventional method

Hypothesis 1: There is no significant difference between the pre-test and post-test mean score of students in Economics exposed to testwiseness strategy and students in the control group

Table 2: Analysis of Covariance (ANCOVA) for Pre-test and Post-test Mean Scores of Students under the Groups

Sources	Sum of Square	df	Mean Square	F	Sig.
Corrected Model	11789.211 ^a	2	5894.606	4602.703*	.000
Intercept	1237.273	1	1237.273	966.104*	.000
Groups	11753.922	1	11753.922	9177.851*	.000
Error	303.522	237	1.281		
Total	197352.000	240			
Corrected Total	12092.733	239			

a. R Squared = .975 (Adjusted R Squared = .975)

* P < 0.05

Table 2 shows that there is a significant difference between the pre-test and post-test mean score of students in Economics exposed to testwiseness and students in the control group as $P(.000) < 0.05$ and F-calculated (1, 237) = 9177.851 is greater than F-table (254.3) at 0.05 level of significance. This result led to the rejection of the hypothesis. Hence, there is a significant difference between the pre-test and post-test mean scores of students in Economics exposed to testwiseness and students in the control group.

Hypothesis 2: There is no significant interactive effect of gender on the performance of students exposed to the testwiseness strategy.

Table 3: Two-way Analysis of Covariance of the effect of gender on the academic performance of students exposed to testwiseness strategy

Source	Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	83.674 ^a	3	27.891	84.878	.000
Intercept	115528.357	1	115528.357	351574.110	.000
Gender	.161	1	.161	.491	.485
Performance	74.773	1	74.773	227.548	.000
Gender * Performance	.127	1	.127	.387	.535
Error	38.118	116	.329		
Total	145377.000	120			
Corrected Total	121.792	119			

a. R Squared = .687 (Adjusted R Squared = .679)

Table 3 shows that $P(.535) > 0.05$ and F-calculated (1, 116) = 0.387 is less than F-table (3.00) at 0.05 level of significance. This result led to the non-rejection of the hypothesis. Hence, there is no significant interactive effect of gender on the performance of students exposed to the testwiseness strategy. This implies that gender does not influence the performance of students exposed to testwiseness strategy.

Hypothesis 3: There is no significant interactive effect of location on the performance of students exposed to testwiseness strategy

Table 4: Two-way Analysis of Variance of the effect of location on the academic performance of students exposed to testwiseness strategy

Source	Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	83.512 ^a	3	27.837	84.355	.000
Intercept	122125.184	1	122125.184	370076.204	.000
Location	.001	1	.001	.002	.961
Performance	81.679	1	81.679	247.512	.000
Location * Performance	.042	1	.042	.128	.721
Error	38.280	116	.330		
Total	145377.000	120			
Corrected Total	121.792	119			

a. R Squared = .686 (Adjusted R Squared = .678)

Table 4 shows that $P(.721) > 0.05$ and $F\text{-calculated}(1, 116) = 0.128$ is less than $F\text{-table}(3.00)$ at 0.05 level of significance. This result led to the non-rejection of the hypothesis. Hence, there is no significant interactive effect of location on the performance of students exposed to testwiseness strategy. This implies that location does not influence the performance of students exposed to testwiseness strategy.

DISCUSSION

The findings of the study revealed that testwiseness strategy and conventional method influence students' performance in Economics with testwiseness having the higher effect. It shows that testwiseness affects students' performance in Economics. This finding agrees with that of Gbore and Osakuade (2016) and Hamad (2010) that testwiseness would lead to good academic performance.

The findings further revealed there was no significant difference in pre-test mean scores of students exposed to testwiseness and the control group. This implies that students exposed to both the testwiseness strategy and control group were homogeneous at the commencement of the study. This finding satisfies one of the characteristics of a good sample which is homogeneity.

Findings of the study also revealed that a significant difference exists in the post-test mean scores of students in Economics exposed to testwiseness strategy and conventional method. The findings showed that students exposed to the testwiseness strategy performed better than those exposed to the conventional method. This agrees with the submission of Gbore and Osakuade (2016), Hamad (2010), Mustapha (2001) and Rdadi (2001) who all concluded that testwiseness strategy greatly influenced students' academic achievement. This finding implies that the testwiseness strategy will encourage positive study habits among students since the strategy involves evaluating students more often.

Furthermore, the result showed a significant difference in the pre-test and post-test scores of students in Economics among the groups, especially testwiseness strategy. This result agrees with Hamad (2010), Shahat (2007) and Yousef's (2004) submission that when students are exposed to testwiseness, it will lead to better performance.

The findings also showed that there was no interactive effect of gender and school location on the performance of students exposed to the testwiseness strategy. This means that gender and school location have nothing to do with Students' achievement in Economics using the testwiseness strategy. The findings agreed with that of Shahat

(2007) and Yousef (2004) who observed that gender and location have no interactive effect on students' academic performance exposed to testwiseness. But the findings contradicted the report of Hamad (2010) who concluded that gender has an interactive effect on students' performance exposed to testwiseness strategy.

CONCLUSION

It can be concluded from the findings of this study that the testwiseness strategy has a positive impact on the student's academic performance and that gender and location did not moderate the impact of testwiseness on the academic performance of students of Economics exposed to the testwiseness strategy.

CONFLICT OF INTEREST

There is no conflict of Interest

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RECOMMENDATIONS

Based on the findings of this study, the following recommendations are made.

1. The use of the testwiseness strategy should be incorporated into Economics class in secondary schools because it improves students' academic performance irrespective of Students' gender and school location
2. Economics teachers should be given adequate orientation through workshops and seminars to update their knowledge in the use of testwiseness strategy.

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