

# TEST WISENESS STRATEGIES AS PREDICTORS OF STUDENTS' ECONOMICS ACHIEVEMENT IN CERTIFICATION EXAMINATIONS

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OKE, W. N.

Centre for Applied Research, Educational Consultancy and Evaluation (CARECE)  
[tomeoke@yahoo.com](mailto:tomeoke@yahoo.com); [oketome@gmail.com](mailto:oketome@gmail.com);

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## Abstract

*This study investigated test-wisness strategies as predictors of Students' Economics Achievement in Certification Examinations. Correlational research design was adopted and the population comprises of Senior Secondary School (SS 3) students who are preparing for WAEC or NECO. A sample of 350 SS 3 students was drawn using multi-stage sampling procedure and stratified random sampling techniques to select the respondents from Delta Central Senatorial zone. Two instruments used to collect data for the study is the 2018 WAEC Economics Multiple Choice 50 items and Test-wisness Scale (TWS) which measures test-wisness strategies on time, error avoidance, guessing and deductive reasoning. The TWS was validated by experts in the field of Measurement and Evaluation using face and content. The TWS was pilot tested on 50 respondents who are not part of the sampled for the study. Cronbach Alpha reliability coefficient was used to establish the reliability of the TWS yielded 0.78 as its internal consistency. Data collected were analyzed and hypotheses were tested at 0.05 level of significance using Pearson's Product Moment Correlation Coefficient (PPMCC) and Multiple Regression Analyses. Findings from the study showed that: (i) there is no significant joint contribution of test-wisness strategy and achievement in Economics; (ii) test-wisness guessing strategies has a relative significant prediction in students achievement in Economics. The study recommends that psychometricians and examination body should put into considerations the practice of good test-wisness strategy that will not affect the reliability and validity of the test items.*

**Keywords:** Achievement, Assessment, Economics, Test-wisness strategies,

## Introduction

Academic achievement of students in Economics has received numerous attention by researchers who have presented an explicit and concise benefits and importance of the “mother and queen” of all social science subjects. Economics is the study of human behaviour and how society decides what, how and for whom to produce (Begg, Fischer & Dornbusch, 2000). An analysis on the introduction and importance of economics to students and the economy was presented by Obemeata (1980). According to Obemeata, the introduction of economic as a secondary school subject in Nigeria was hastened by the sharp rise in the number of economics graduates in the country. With an increase in the number of students of economics in universities, the supply of economics graduates exceeded the demand for them in commerce and industry. Obemeata (1980) submits that the Ministries of Education in the country have not thought it necessary to organise or sponsor refresher course or workshops or conferences for secondary school teachers of economics. He however, noted that if and when economics is sufficiently recognised as a secondary school subject, the various state

ministries of education should sponsor or organise conferences, 'workshop and refresher courses for secondary school teachers of economics as they have done for other secondary school subjects such as Nigerian languages, history and the sciences.

The introduction of new trends in the assessment and grading of students' achievement in economics test items and other subjects has drawn the attention of psychometrician and measurement experts in evaluating students' achievement and psychological traits that have been fashioned to help shape the assessment and grading system. Test-wiseness strategy is seen as a pathway for students on the assessment procedure in various forms of multiple choice testing. The use of Multiple-choice tests is a widely means of evaluation and are very important in assessing students performance on a wide range of grading system. The concept of Test-Wiseness (TW) was first introduced by Robert L. Thorndike (1951).who conceptualized "Test-Wiseness" as a general and lasting characteristic of the individual that affects test scores. In 1965, Millman, Bishop, and Ebel defined test-wiseness as the capacity to utilize the characteristics and formats of the test and/or the test-taking situation to receive a high score. Test-wiseness is logically independent of the examinee's knowledge of the subject matter for which the items supposedly measure. Test-wiseness comprises of four (4) strategies and with distinct characteristics for each of the strategy. These strategies includes; time using strategies, error avoidance strategies, guessing strategies and deductive reasoning strategies.

Abedalqader, Hisham, Abedalqader and Hassan (2015) citing Gibb (1964) defined TW as an individual ability to answer correctly on multi – choice items containing external evidences to get high scores independently from knowledge with content subject. In another development, Oakland (1972:355) in Abedalqader et al., (2015) defined test-wiseness as "the ability to manifest test-taking skills which utilize the characteristics and format of a test and for test taking situation in order to get a score commensurate with the abilities being measured". It is imperative that in test construction and writing good multiple-choice questions (MCQs) test constructor should be mindful of possible cues in their items that will lead to guessing. In testing and assessment of learners' ability on test-wiseness strategy, one key area of focus that most testees relay on is the guessing of items. This has led to recent trends in measurement framework of the Item Response Theory which takes consideration of the guessing parameter model. This is because it allows testees to score points on chance rather than sure knowledge of the subject. Guessing reduces objectivity of tests and it makes it difficult to distinguish between a testee who has guessed correctly and the one who actually knows the answer.

Study by Gbore and Osakuade (2016) investigated the effects of test-wiseness training in Mathematics on adolescent secondary school students' test anxiety. The research study adopted for the study was an experimental research that involved pretest, posttest and control groups design. One hundred and twenty (120) SS 3 students of Ondo State public secondary schools were used for the study. These participants were randomly assigned to experimental and control groups. Experimental group was made to undergo the test-wise training package in Mathematics (TTPM), which lasted for six weeks, while 'placebo' was used on the control group. Two instruments were used to collect data. The findings showed that: there is no significant difference in the test anxiety levels of the participants before exposure to treatments; and test-wiseness training in Mathematics had positive impact on the adolescent secondary school students' test anxiety levels. The findings also reveal that adolescent students without test-wiseness training are more test anxious than the adolescent students with test-wiseness training in mathematics.

Igwe and Orluwene (2019) investigated test-taking strategies as predictors of students' Mathematics achievement in secondary schools in Rivers State. The correlational research design was used with a sample of 800 students drawn from the population of 35,201 Junior Secondary School three (JSS 3) students in Rivers State public schools. Multiple-choice questions on Mathematics of 2017 Rivers State Basic Certificate Examination were adapted and used to determine students' Mathematics achievement. Test-Taking Strategies Scale (TSS) was adapted and used for students' test-taking strategies. Data collected were analyzed using multiple regression, t-test and analysis of variance (ANOVA) associated with multiple regression. Results of the study tested at 0.05 level of significance showed: test-taking strategies jointly do have a significant prediction on students' academic achievements in Mathematics. It was therefore recommended that students should adopt test-taking strategies jointly and educators should teach students test-taking strategies.

Study conducted by Abedalqader, Hisham, Abedalqader and Hassan (2015) investigated the level of using Test-wiseness strategies for the students of arts and sciences Faculty at Sharourah and its relationship with some variables. a questionnaire was designed which consisted of (29) items measuring three domains of test-wiseness strategies. It was applied on a sample which consisted of (299) students. Results of the study showed that all test-wiseness strategies were highly used. The strategies used after answering become in the first rank; followed by strategies used before answering; and lastly the strategies used during answering, and no statistically significant differences were found in the degree to which students' using test-wiseness strategies due to the influence of some variables: (gender, academic level, major).and differences were found due to the achievement level, the study recommended constructing similar studies using other classifications of TW strategies, and their relationship with some variables.

Tabrizi and Vahed (2017) in their study investigated learner strategies and test-wiseness of the intermediate and advanced Iranian TOEFL iBT test takers. The aim of the present study was to raise awareness about the type of questions in iBT, brush up the necessary skills integratively, and help them employ strategies that can facilitate optimal results during the preparation course and as they were taking the test. Furthermore, we intended to investigate if the level of proficiency alone was sufficient or strategies played a more important role. Therefore, 34 iBT candidates (18 intermediate and 16 advanced) sat an iBT test and later took part in special strategy training courses. They were interviewed on the effectiveness of the strategies during the course and after they sat the second exam. As the results revealed, there was a significant difference between the two sets of exam results and being test-wise and the strategies of goal setting, covering, interleaving, and considering the context along with spaced practice and compensation strategies helped the candidates perform better without further language classes.

The performance of student in certification or placement economics examination has received little publicity by researchers. Economics as a subject as proven to be a great subject that helps to transform any nation in meeting its economic policy. Assessment of testee using Multiple Choice or Objective Test items have been confronted by series of challenges ranging from its reliability, validity, authenticity, test-taking strategy, anxiety and test-wiseness strategy. Previous research has shown the relationship or effect of test-wiseness on subjects such as Mathematics (Igwe & Orluwene, 2019), Physics, (DeVore, Stewart & Stewart, 2016) and other science related subjects Abedalqader, Hisham, Abedalqader, & Hassan, (2015). Research and dearth of literature has not shown much in the discourse, and the importance of

test-wiseness strategy such as time using strategies, error avoidance strategies, guessing strategies and deductive reasoning strategies in the prediction of students' achievement in Economics. It is against this background that this study investigated the predictive power of test-wiseness strategy on students' achievement in economics

The aim of the study is to investigate the predictive powers of test-wiseness strategies on students' academic achievement in Economics. In specific terms, the study intends to: achieve the following objectives:

1. To find out the joint predictive power of test-wiseness strategies (time using strategies, error avoidance strategies, guessing strategies and deductive reasoning strategies) on students' academic achievement in Economics.
2. Determine the relative predictive power of test-wiseness strategies (time using strategies, error avoidance strategies, guessing strategies and deductive reasoning strategies) on students' academic achievement in Economics.

### **Research Hypotheses**

1. There is no significant joint prediction of test-wiseness strategies (time using strategies, error avoidance strategies, guessing strategies and deductive reasoning strategies) on students' academic achievement in Economics.
2. There is no significant relative prediction of test-wiseness strategies (time using strategies, error avoidance strategies, guessing strategies and deductive reasoning strategies) on students' academic achievement in Economics.

### **Methodology**

The study adopted correlational research design. Correlational research design is imperative because it is used to establish the associational and joint relationship between and among the variables of the study. Population of the study comprises of Senior Secondary School (SS 3) students who were preparing for the WAEC SSCE certification examination. A sample of 350 Senior Secondary School (SS 3) students was drawn using multi-stage procedure. At the first stage, stratified random sampling techniques based on senatorial zone was employed to select 4 Local Government Areas (LGA) out of the 8 LGA's in Delta Central. From each sampled LGA, simple random sampling procedure was used to select 5 schools from each of the 4 LGA and 30 students each from the sampled school. Two instruments were used to collect data for the study. The first instrument used is the 2018 WAEC Economics Multiple Choice 50 items which was adopted while the test-wiseness Scale (TWS) was constructed by the researcher for assessing students' test-wiseness skill. The Test-Wiseness Scale (TWS) consisted of two parts. Part A was to enable the researcher elicit demographic information on the respondents, while Part B consisted of 10 items for each of the four (4) test-wiseness strategy variables under study. The respondents expressed their level of agreement or otherwise to each statement based on a 4 point Likert type scale of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD). The TWS is an instrument which measures the following test-wiseness strategies: time using strategies, error avoidance strategies, guessing strategies and deductive reasoning strategies. The TWS was validated by two experts in the field of Measurement and Evaluation with the use of face and content validity. The TWS was further pilot tested on 50 respondents who are not part of the sampled for the study. Cronbach Alpha reliability coefficient was used to establish the reliability of the TWS yielded 0.78 as its internal consistency. Data collected were analyzed and hypotheses were tested at 0.05 level of



significance using Pearson's Product Moment Correlation Coefficient (PPMCC) and Multiple Regression Analyses.

## Results

**Hypothesis One:** *There is no significant joint prediction of test-wiseness strategies (time using strategies, error avoidance strategies, guessing strategies and deductive reasoning strategies) on students' academic achievement in Economics.*

**Table 1:** Regression Summaries and ANOVA on Joint Prediction of Test-Wiseness Strategies and Economics Achievement

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	649.755	4	162.439	3.442	.009
	Residual	16279.342	345	47.186		
	Total	16929.097	349			
<b>Model Summary</b>						
Model			1			
R			.196 <sup>a</sup>			
R square			.038			
Adjusted R square			.027			
Std Error of the Estimate			6.869			

Table 1 shows that the relative contributions of the independent variables (time using strategies, error avoidance strategies, guessing strategies and deductive reasoning strategies) in predicting students' academic achievement in Economics. The result reveals that for the combined effect of the relative factors on the variables is gives as: [ $F_{(4, 345)} = 3.442$ ,  $p < 0.05$  (.009)]. The multiple correlation coefficient (R) of all the combined independent variables (test-wiseness strategy) with students' academic achievement in Economics = .196, while adjusted  $R^2$ , which estimates the variance accounted for by the combined independent variables to the dependent variable measure is .038, which translates to 3.8% contribution of the independent variables to students' academic achievement in Economics. The result reveals a significant relative prediction of test-wiseness strategies (time using strategies, error avoidance strategies, guessing strategies and deductive reasoning strategies) on students' academic achievement in Economics.

**Hypothesis Two:** *There is no significant relative prediction of test-wiseness strategies (time using strategies, error avoidance strategies, guessing strategies and deductive reasoning strategies) on students' academic achievement in Economics.*

**Table 2:** Relative Contribution of Test-Wiseness Strategies and Economics Achievement

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	27.650	5.723		4.832	.000
Time_Using_	-.081	.104	-.042	-.782	.435
1 Error_Avoidance	-.001	.107	-.001	-.014	.989
Guessing_	.373	.104	.190	3.598	.000
Deductive_Reasoning	-.077	.095	-.044	-.818	.414

a. Dependent Variable: Economics\_Achievement

Findings from the study further reveals that there is a significant relative contribution of guessing strategies ( $\beta = .373$ ,  $t_{(345)} = 3.598$ ,  $p < 0.05$ ) on students' academic achievement in Economics. The result further reveals that time using strategies ( $p = .435$ ), error avoidance strategies ( $p = .989$ ) and deductive reasoning strategies ( $p = .414$ ) has no significant relative contribution to the prediction of students academic achievement in economics.

### Discussion of Findings

Findings from this study reveal that there is no significant joint prediction of test-wiseness strategy (time using strategies, error avoidance strategies, guessing strategies and deductive reasoning strategies) on students' academic achievement in Economics. In line with the findings of this study is the result of DeVore, Stewart and Stewart (2016) which revealed that student avoidance of “none of the above” or “zero” distracters was statistically significant. The effect of the position of a distractor on its likelihood to be selected was also significant. The effects of several potential positive and negative test-wiseness effects on student scores were also examined by developing two modified versions of the Force Concept Inventory FCI designed to include additional elements related to test-wiseness; test-wiseness produced little effect post-instruction in student performance on the modified instruments. Abedalqader, *et al.*, (2015) on the test-wiseness strategies found no statistically significant differences in the degree to which students' using test-wiseness strategies due to the influence of some variables: (gender, academic level, major) and differences were found due to the achievement level, the study recommended constructing similar studies using other classifications of test-wiseness strategies, and their relationship with some variables.

The result further shows a significant relative prediction of test-wiseness strategy (guessing strategies) on students' academic achievement in Economics. The result of this study is in line with the study of Mutua (2012) findings indicated that the test-wiseness strategy had a significant predictive ability for Kenyan secondary students that practiced test-wiseness skills. This is also in agreement with the findings of Igwe and Orluwene (2019) results which showed that test-taking strategies jointly do have a significant prediction on students' academic achievements in Mathematics. This is however contrary to the findings of Gbore and Osakuade (2016) which showed that there is no significant difference in the test anxiety levels of the participants before exposure to treatments on test-wiseness training and also test-wiseness training in Mathematics had positive impact on the adolescent secondary school students' test anxiety levels. The result of the study further corroborates with Fakorede

(2012) results revealing that test-wiseness training was efficacious in improving the Mathematics performance of students and in reducing their Mathematics anxiety level while training in test-taking strategies was significantly most effective for low ability students. Fakorede (2012) however found no gender difference in the students' performance in Mathematics, as test-wiseness training was equally effective in helping both male and female participants in improving Mathematics achievement and managing their Mathematics Anxiety levels.

### **Conclusion**

Finding from the study concludes that there is no significant joint prediction of test-wiseness strategy in students' achievement in economics test items. The result further shows a significant relative prediction of test-wiseness strategy (guessing strategies) on students' academic achievement in Economics. It appears such cues favour pupils who have no knowledge or skills in economics. Thus it should be of particular concern that pupils who guess can get the correct answers to such items with a good measure of success.

### **Recommendations**

1. Psychometricians, teachers and examination body should put into considerations the practice of good test-wiseness strategy that will not affect the reliability and validity of the test items.
2. Students should also take advantage of the test-wiseness strategy that will make them to perform well during the assessment or testing process.

## References

- Abedalqader, O., Hisham, B.K., Abedalqader, B., & Hassan, B.H (2015). The Level of Test–Wiseness for the Students of Arts and Science Faculty at Sharourah and its Relationship with Some Variables. *Journal of Education and Practice*, Vol.6, No.29.
- Begg, D., Fischer, S., & Dornbusch, (2000). Economics. 6<sup>th</sup> edition. Published by McGraw-Hill Publishing Company. Shoppenhangers Road, Maidenhead, Berkshire, SL6, 2QL, England. [www.BeggEcon.com](http://www.BeggEcon.com)
- DeVore, S. Stewart, J. & Stewart, G., (2016). Examining the effects of testwiseness in conceptual physics evaluations Physical Review Physics Education Research 12, 020138 (2016). Published by the American Physical Society
- Fakorede, J.O., (2012). Effects of Test-wiseness Training on Test-Anxiety and Achievement in Mathematics among Selected Secondary School Students in Ekiti State. Unpublished Ph.D Thesis in the Department of Educational Foundations submitted to the School of Postgraduate Studies, University of Lagos.
- Gbore, L.O., & Osakuade, J.O., (2016). Effects of Testwiseness Training in Mathematics on Adolescent Secondary School Students' Test Anxiety in Ondo State, Nigeria. *Journal of Education and Practice*, Vol.7, No.10, 2016; [www.iiste.org](http://www.iiste.org)
- Igwe, B.N., & Orluwene, G.W., (2019). Test-Taking Strategies as Predictors of Students' Mathematics Achievement in Rivers State. *International Journal of Innovative Psychology & Social Development* 7(2):1-7
- Mutua, B.M, (2012). Nature and Practice of Test-Wiseness the case of Kenyan Schools University of Nairobi School of Education Department of Psychology. A Research Project Submitted to the Board of Post Graduate Studies in Partial Fulfillment for the Award of Master of Education in Measurements and Evaluation, School of Education, University of Nairobi.
- Millman, J., Bishop, C. H. & Ebel, R. (1965). An Analysis of Testwiseness. *Educational and Psychological Measurement*, 25, 707 – 726.
- Obemeata, J.O. (1980). Pupils' Perspective of the purpose of Economics Education in Nigerian Secondary Grammar School. *West African Journal of Education*. 21 (2)
- Tabrizi, A.N., & Vahed, F.Z., (2017). Learner Strategies and Test-Wiseness of the Intermediate and Advanced Iranian TOEFL iBT Test Takers. *The Journal of Applied Linguistics and Applied Literature: Dynamics and Advances*, Volume 5, Issue 2, Summer and Autumn, pp. 91-100
- Thorndike, E. L. (1951). Reliability. In E. F. Lindquist (Ed). *Educational Measurement*. Washington, D. C: American Council of Education.