

ANALYZING GENDER DIFFERENCES IN ACHIEVEMENT TEST ITEMS IN ECONOMICS

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ABSTRACT: This study investigates gender differences in achievement within the matching test format of an economics assessment instrument. Assessment tools, such as tests, play a crucial role in evaluating students' abilities and achievements in various subjects, including economics. Different test formats, such as essay tests and structured response tests, are used to assess students' learning objectives, knowledge, and teaching method effectiveness. One specific type of assessment is the matching test, where students are required to match questions to corresponding responses based on well-defined instructions.

The study focuses on understanding whether there are gender-based disparities in the performance of male and female students in the context of matching test items in economics. Previous research has shown that gender can influence test performance, and this study aims to contribute to the existing body of knowledge in this area.

Keywords: matching test, economics assessment, gender differences, achievement, test format

INTRODUCTION

Assessment of students' ability, latent trait, skills, interest and achievement is carried out using an instrument. An instrument is a tool used to ascertain the level of success made or achieved in a school subject like Economics. The instruments are questionnaire, interest scales, rating scales and test. Eneja and Ikeh (2016) noted that a test is an instrument used to detect the present and absent of attribute being sought for. The attribute could be the extent of learning objective achieved, amount of knowledge demonstrated in the task presented during instruction, the learning objective covered, and the efficacy of teaching methods as opined by Eneja and Ikeh (2016). Nwana (2007), Ogunniyi (1984), Ohuche and Akeju (1988) have classified test under the format frame into two: The free response type which includes the essay or extended free answer test and the restricted or short answer test; and the structured response type or objective type which includes the multiple choice type, the alternative response or true or false type, the fill-in the answer or completion type and the pairing or matching type. Anikwenze (2010) described essay tests as the traditional type of examination in which the examinee is to describe, define, compare and contrast, illustrate, classify, enumerate or state. Essay item format can be short essay/ restricted free- response or extended free response / long essay. In extended free response, the student is given the freedom to answer questions in as many pages as possible while for restricted free- response test items, the student are allowed to organize and present their responses, but restricted to specific number of words or point (Onukwo, 2002).

Matching test items consist of two parallel columns. One column contains a list of word, number, symbol or questions while the other contains the response. The response is more than the question. The students are required to match the questions to the response according to a well defined instruction or directions. Usually, the two lists have some sort of relationship. Although the basis for matching responses to questions is sometimes self-evident but more often it must be explained in the directions. Alonge, Adebule and Osundare (2014) reported significant difference between the performance of male and female students in matching test format of chemistry achievement test. Gender achievement in matching test item in economics was investigated in this study.

The fill-in (FI) or completion test is an incomplete statement or sentence which the examinee completes from memory with a word or short phrase. The FI requires the student to know the correct answer rather than having to guess from a list of possible answers and is very rarely used in senior secondary school and higher institution testing and programs (Ogoamaka &Ihekwaba, 2010). Bolger and Kellaghan (1990) reported significance difference in the mean achievement scores of male and female in Fill-in test item format while Ahmad (2016) found that female students' performed higher than male students' on completion item test format. This study looked at gender achievement in fill format and multiple choice tests. The multiple choice test is a form of assessment tool in which respondents are asked to select the best answer out of the options in a given list. The correct choice is called the key while the other options are called distracters (Ogomaka &Ihekwuoba, 2010). Amuche, Thomas and Onesimus, 2013) noted that multiple choice test (MCT) has gained prominence and has become the main testing format in most schools and programs. Beller and Gafni (2000) reported significant difference in the mean achievement scores of male and female in multiple choice test item formats while Opong (2013) showed no significant difference in the mean achievement scores of male and female in multiple choice test item formats. Ahmad (2016) found that female students' performed higher than male students' on multiple choice item test format. This study looked at gender achievement in multiple choice tests assessment in economics.

Assessment of students achievement in a given item test format is measured through achievement test. An achievement test is a testing instrument administered to an individual or group as stimuli to elicit certain desired or expected response as demanded in the instrument. According to Ali (2006) these expected response or performance of the individual students is assigned a score representing his/her ability. The score is an index of student's achievement in a test. The Nigerian educational research and development council (2007) in the Curriculum of secondary school Economics stipulates that continuous assessment should be used to assess the level of student attainment or achievement. The curriculum does not state the test item format to be used in assessing students on continuous assessment but the West African Examinations Council (WAEC) and National Examinations Council (NECO) suggest multiple choice and essay test item type in measuring achievement in Secondary school. The demand of the curriculum and WAEC and NECO suggestions restrict divergent assessment tools in determining achievement in Economics. This creates a condition in which Essay test, multiple choice test, fill-in format, Matching test do not have equal or proper utilization in assessing achievement in Economics, thereby showing imbalance in terms of assessing the Cognitive, Psychomotor and affective domain

of Learning. Hence, a study to integrate different test item format in assessing student achievement in economics irrespective of student gender become indispensable.

Gender is a social construct, it is not biologically determined but a concept equivalent to race or class (Offorma, 2004). This definition suggests that gender is socially or culturally constructed characteristics and role, which are associated with males and females in society. It is different from sex which is a biological distinction in appearance (morphology) and function (physiology) as well as reproductive contributions of men and women. The difference in academic achievement in relation to gender and test item types is crucial to the educationists. Mazzeo, Schmitt and Bleitein (1992) found that females perform better than males on some performance based assessments (essays) in comparison to multiple choice formats. In a similar study Everaert and Arthur (2012) on constructed-response versus multiple choices indicated that female students outperform male students on both constructed-response and multiple choice type questions. However the superiority of female students is larger on constructed response questions than on multiple choice questions. Hence, female students have relative advantage over male students in constructed-response. Furthermore, male students have relative advantage over female students in the multiple-choice questions because their score is much larger for the multiple choice questions. However, Essien (2012) found that male students perform better than female counterparts in essay type test items while the female students rather performed better in the multiple choice test items. Schohamy (2000) examined the effect of item format (multiple choice and open-ended items) and language of assessment (first language L_1 versus second language L_2) on performance in second language (L_2) reading tests. The main conclusion drawn from the study was that item format can affect test scores. Also Ogoamaka and Ihekweaba (2010) opine that since real life problems do not present options that serve as distracters, the fill-in test format should be used more in secondary schools to prepare students for real life adaptation. But on the contrary, the study conducted by Williams (2007) opined that only item formats cannot be accountable to low or higher test scores. Could a particular test item format favor either male or female better in Economics? The achievement differences between Male and Female on test item types is contradictory and inconclusive, making it imperative to investigate whether gender has any influence on test item type in economics achievement test. This study assesses gender achievement in test item format among students of Economics in senior secondary school in Nnewi Education Zone of Anambra State.

PURPOSE OF THE STUDY

The main purpose of this study was to assess gender disparity in achievement test item formats among students of economics in Secondary Schools in Nnewi Education Zone of Anambra State. Specifically, the researchers seek to determine the:

1. Mean scores of male and female students' in multiple choice achievement test item format in Economics
2. Mean scores of male and female students' in Fill-in achievement test item format in Economics.
3. Mean scores of male and female students' in matching achievement test item format in economics.
4. Mean scores of male and female students' in Essay achievement test item format in Economics.

Research Questions

The following research questions were posed for this study.

1. What are the mean scores of male and female on multiple choice test item formats in Economics?
2. What are the mean scores of male and female on Fill-in test item format in Economics?
3. What are the mean scores of male and female on matching test format in Economics?
4. What are the mean scores of male and female on essay test item format in Economics?

Hypotheses

The following hypotheses were formulated for this study and were tested at 0.05 level of significance.

H₀₁. There is no significant difference in the mean achievement scores of Male and Female students in multiple choice test item format in Economics.

H₀₂. There is no significant difference in the mean achievement scores of Male and Female students in Fill-in test item format in Economics.

H₀₃. There is no significant difference in the mean achievement scores of Male and Female students in matching test item format in Economics.

H₀₄. There is no significant difference in the mean achievement scores of Male and Female students in essay test item format in Economics.

METHODOLOGY

Ex-post facto research design was adopted for the study. The target population is 2,380 Senior Secondary School two (SS11) Students in the 49 public Senior Secondary schools in the study zone. Out of this number, one thousand and six (1006) are males and one thousand three hundred and seventy four (1374) are females. The sample size for the study was 368 SSII Economics students composed through multi-stage sampling techniques. Economics achievement test (EAT) adapted from WAEC and NECO past questions was the instrument for data collection. The instrument was partitioned into section A, B, C and D. Section A is multiple choice format, Section B Fill-in test format, Section C Matching test format and Section D Essay test format. The instrument was face validated by three experts, one in measurement and evaluation and two from economics education all from faculty of education, University of Nigeria Nsukka while content validation was achieved through table of specification. Reliability index of 0.75, 0.74, 0.79 and 0.72, were obtained for different test item formats using Kuder- Richardson method for multiple choice, fill format, matching format and scorer reliability for essay format. The test was administered to the students with the help of economics teachers in the school sampled for the study. Mean and standard deviation were used to answer the research questions while t-test of significant was used to test null hypotheses at 0.05 level of significance.

RESULTS

Table 1: Mean, standard deviation and t-test of male and female student achievement on test item format

Test item format	Gender	N	Mean	Standard deviation	df	Tcal	Sig
Multiple choice	Male	141	67.92	14.43	366	2.49	0.013
	Female	227	63.89	15.42			
Fill in	Male	141	54.56	12.65	366	3.95	0.000
	Female	227	49.01	13.35			
Matching	Male	141	50.19	11.49	366	2.34	0.019
	Female	227	47.06	12.96			
Essay	Male	141	42.45	11.02	366	2.84	0.005
	Female	227	46.86	12.18			

From the data analysis results in Table 1, Male students had a mean achievement score of 67.92 and a standard deviation of 14.43 while Female students had a mean achievement score of 63.89 and a standard deviation of 15.42. This shows that male students had a higher achievement mean score than the female students. There was significant difference in the mean achievement of male and female students in multiple choice test t (2.49) is .01 and $P < 0.05$, the null hypothesis is rejected. Also in Table1, Male students had a mean achievement score of 54.56 and a standard deviation of 12.65 while Female students had a mean achievement score of 49.01 and a standard deviation of 13.35. This shows that male students had a higher achievement mean score than the female students. The probability value associated with the calculated value of t (3.95) 0.00 is less alpha value of 0.05. ($P < 0.05$), the null hypothesis is rejected. Thus, there is a significant difference in the mean achievement scores of Male and Female students in Fill-in test item format in Economics in favor of males.

Findings in Table 1 show that, Male students had a mean achievement score of 50.19 and a standard deviation of 11.49 while Female students had a mean achievement score of 47.06 and a standard deviation of 12.96. This shows that male students had a higher achievement mean score than the female students. The obtained value of t (2.34) is significant at exact probability value of 0.019 ($P < 0.05$) the null hypothesis is rejected. Thus, there is a significant difference in the mean achievement scores of Male and Female students in Matching test item format in Economics in favor of males. Results in Table 1 revealed that Male students had a mean achievement score of 42.45 and a standard deviation of 11.02 while Female students had a mean achievement score of 46.86 and a standard deviation of 12.18. This analysis shows that Female students had a higher achievement mean score than the Male students. The obtained value of t (2.84) is significant at 0.005 alpha level ($P < 0.05$), the null hypothesis is rejected and the researchers concluded that there is a significant difference in the mean achievement scores of Male and Female students in essay test item format in Economics in favor of Females.

DISCUSSION

The findings of this study revealed that achievement mean scores of Male is higher than the achievement mean scores of female in multiple choice test item format. The findings is in agreement with the findings of Essien

(2012) who reported a significant gender difference in both multiple choice and essay test in favor of the male students. Also in line with the study of Beller and Gafni (2000) who showed that there is significant difference in the mean achievement scores of male and female in multiple choice test item format. That male achieved higher than female in multiple choice than in constructed response. On the contrary Opong (2013) showed no significant difference in the mean achievement scores of male and female in multiple choice test item formats, which means female students do not have any problem with examination forms; they achieve better in all forms of examination. The findings of this study indicates that, there is a significant difference in the mean achievement scores of Male and Female students in Fill-in test item format in Economics in favor of males. Male students had higher achievement mean score than female. The finding is in agreement with the findings of Bolger and Kellaghan (1990) who found that there is a significance difference in the mean achievement scores of male and female in Fill-in test item format. The findings of this study revealed that achievement mean scores of Male is higher than the achievement mean scores of female in matching test item format. This achievement mean which showed that, there is a significant difference in the mean achievement scores of Male and Female students in matching test item format in Economics in favor of males. The finding of this study is in line with findings of Alonge, Adebule and Osundare (2014) who reported significant difference between the performance of male and female students in matching test format of chemistry achievement test.

The findings of this study with respect to influence of gender on Essay test item format are significant. Female students achieved higher than the male students on Essay test item format. The result of this study supports the findings of Everat and Arthur (2012) who found out that female students outperform the male counterpart in constructed response format (essay). Hence females have relative advantage over male students in constructed response format (essay).

CONCLUSION

On the basis of the findings, the following conclusions have been drawn.

1. Male students achieved better than female students in multiple choice test item formats in secondary school Economics.
2. Male students achieved better than female students in fill-in test item formats in secondary school Economics.
3. Male students achieved better than female students in matching test item formats in secondary school Economics
4. Female students achieved better than Male students in essay test item formats in secondary school Economics

RECOMMENDATIONS

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

1. The sole or dominant use of multiple choice test formats should be minimized because the students' high achievement in it may be as a result of guessing. Other test item formats should be included or incorporated in secondary schools' Economics testing programmes.
2. Government should organize seminars, conferences and workshops for Teachers to update their knowledge and skills on the construction of different test item format. Since, it was found out in this study that test item formats influence academic achievement of students.
3. Teachers should attempt to generate a pool of test items in different formats in order to ease problem of classroom assessment.
4. There should be item banks from where the respective tests are drawn, since some classroom teachers are not knowledgeable enough to construct a valid test items.

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