



Attitude of undergraduates towards multiple-choice and true/false item format in achievement testing in the University of port Harcourt, Nigeria

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Abstract

The study investigated the attitude of undergraduates towards item format in the University of Port Harcourt, Rivers State, Nigeria. Two research questions were answered while two null hypotheses were tested at 0.05 alpha level. The study adopted Ex-post facto design. The population of the study consistent of all the undergraduates in the University of Port Harcourt. The sample size of six hundred (600) level 300 to 500 undergraduates were drawn through multi-stage sampling method. Simple random sampling technique by balloting was used to draw six faculties out of twelve faculties in the institution. A self-designed instrument called 'Attitude of undergraduates to assessment format questionnaire was used for data collection. Face, content and construct validities were certified. Construct validity was done, the result yielded Cronbach Alpha values of 0.74 for the multiple choice section, 0.58 for the true/false section item format. Frequency, proportion and simple percentage were used to calculate the responses to ascertain male and female with positive and negative attitude towards the various format, while the hypotheses were tested using Chi-square statistical technique, the results obtained after the analysis showed that there is no significant difference in the proportion of male and female undergraduates with positive and negative attitude towards the various item formats used in achievement testing of undergraduates based on gender. The results were discussed in line with the research questions. It was recommended that teachers, test constructors and developers should set multiple-choice and true/false item format without taking into consideration the gender of the undergraduates as it was revealed that there is no significant difference in the proportion of male and female undergraduates with positive and negative attitude towards the above mentioned formats. Suggestion for further studies, limitation of the study, conclusion and contribution to knowledge were drawn from the study.

Keywords: item format, achievement testing, multiple-choice format, true/false format

Introduction

In the world today, assessment of the performance of students in their study remains an integral part of education. This is due to the fact that assessment plays an important role in the educational system. Mark (2004) saw assessment as the wide variety of methods or tools that educators use to evaluate, measure, or document the academic readiness, learning process, skill acquisition or educational needs of students. However, assessment in education is as old as education itself. The current assessment in education in Nigeria according to Asuru (2002) ^[1] came into existence through the introduction of the National Policy on Education which introduced continuous assessment in all levels of our educational system in Nigeria. This system has been aptly described as one of the most significant innovations of the policy (Federal Republic of Nigeria, FRN, 2004). This method replaced the old form of one-shot examination where only the cognitive domain is assessed. Asuru (2006) ^[2] explained that assessment is a method of determining what the learner has gained from the learning activities in terms of knowledge, thinking and reasoning (cognitive), character and personality development (affective) and industry (psychomotor), which is predicated on the premise that in the classroom, like in other fields, some integrated assessment need to be made on both the products and the processes, and the fact that decisions about the learner can only be effectively made if based on

comprehensive, accurate and reliable information.

Crinte (2007) further explained that assessment could occur in different manners or types such as diagnostic assessment; which takes account of strengths, weakness, knowledge and skill of a learner prior to instruction; formative assessment; which takes account of learners performance during instruction and usually occurs regularly throughout the instruction process; summative assessment; which comes at the end of instruction, norm-reference assessment; which is used to compare learners performance against others and, criterion-referenced assessment; which measures a learner's performance against a goal or standard.

Also contributing, Nwocha (2013) ^[6] stressed that various types of assessment can take different formats. Hence, he explained that assessment format is the distinctive method a teacher used in structuring his or her question, be it a test, assignment, or examination etc., which can be oral or written. He also opined that, the most common assessment format used in Nigerian education for assessment is oral or pencil-and-paper written formats.

Jurnlik (2014) stated that, paper and pencil format are normally used for adolescents and students that are above adolescent in Nigerian institutions, while oral formats are mostly used for kindergarten in schools.

Similarly, Asuru (2006) ^[2] and Mark (2004) stressed that, the most common format for assessment of learners' performance in schools are the objective questions and

essay questions which is further divided into multiple-choice questions, matching questions, alternative response (true/false) supply answer, short answer, restricted and extended essay questions, etc. Sabastine (2001) also explained that different individuals (teacher) in different institutions of learning uses different format in assessing the academic success of learning in school depending on the unique circumstances of the assessment situation and the purpose of assessment. According to him, all the assessment formats used in assessing learner's in school, centered around essay questions, alternative response (true/false), matching questions, multiple choice, supply option, extended-response essay and restricted or short-response essay questions, which he further classified in two such as open and closed responses.

In addition, Linki (2006) stressed that, assessment format could be self or peer assessment, which involves students taking responsibility for monitoring and making judgments about aspects of their own learning, and irrespective of the assessment format adopted, the purpose could essentially be the same thing such measuring the achievement ability of a learner in school subject, (obtain information from a learner), for placement, selection, certification of learners and individuals, counselling and decision making. It enabled parents and guidance to know their children/wards academic performance and strength in their various course of studies. It is also used to gain feedback for the teacher, government and instructional/curriculum planners. Assessment format gives a general view on teachers' competence and learner general learning ability in a course of instruction in school.

Pelloff (2016) noted that attitude is a psychological construct, it is a mental and emotional entity that inheres in, or characterizes a person. These construct as he noted are complex and at various times an individual acquires these state through their experiences in life. It is an individual's predisposed state of mind regarding a value and it is precipitated through a responsive expression towards a person, place, thing or event. Let us also quickly add that an individual's attitude towards something is relative to various individuals. This means that what constitute a positive attitude to one person may to the other enact a negative attitude. In the educational system, student develop various attitude towards almost everything in school. It could be their attitude to school attendance, punctuality, learning, examination or even their teachers. All these put together may define or determines students' effort, persistence and subsequent achievements in examination and other non-cognitive assessment. As regards assessment formats, students' attitude towards the pattern and method of assessment are not uniform. According to Effiong, Nkwo and Udo (2014) ^[3], while some students may prefer multiple-choice items, some may prefer supply type etc. All these constitute the various factors that may determine their perception, and subsequent attitude towards these various assessment formats. However, the attitude of learners in most common assessment format used in the higher institutions especially in multiple choice question and true/false format may differ across institutions, faculties, departments and even among learners.

As noted earlier, there may be multiple types of assessment format which may include the objective test format, the essay format, the supply type, alternative action which are all types of objective formats etc. however, the present study was focused on the multiple choice as well as the true or

false type. The true or false type which is sometimes known as alternate type, yes or no, correct or incorrect type are presented as declarative statements which propose something that the students are to discuss mentally about how well it conforms to reality, the students mark "true" if the statement is true or "false" if the statement is essentially false. Hence this item format presents only two answer options to the students to select one as the right answer (Asuru,2006 & Inko-tariah, 2004) ^[2, 4].

According to apply.unicafe.org (2017), in the construction of the true or false items format, the following rules or guidelines should be followed

1. Make the statement concise and clear. Make sure the proposition that makes the statement true or false is evident.
2. Make sure the statement is clearly true or false.
3. Place the TRUE/FALSE identification before the item.
4. When possible, make a false statement consistent with a typical misconception.
5. Do not use specific determiners (e.g., always, never, none, all, may, sometimes).
6. Keep items short. Long items are harder to read and more difficult to judge true or false.
7. When possible, use positive statements to minimize confusion.
8. Do not lift test items verbatim from the curriculum.

Also, the Multiple-choice test item format are those which require the students to select one response from a set of many alternatives. These items are made up of two parts, the stem and the alternatives. The stem is the direct question or incomplete statement while the alternatives are the options, consisting of correct answers and distracters, which would appear to be correct to a student who does not know the correct answer. The multiple choice (MC) format is the most commonly used format in formal testing. It typically consists of a stem and three or more distractors, but can vary widely. The matching format can be thought of as an MC format, where several items share the same group of options. According to catforms.com, the multiple choice is popular for several reasons which include; 1. No subjective evaluation is required in scoring (the answer is either right or wrong, best or not best, not half-right or partly wrong). 2. It lends itself to detailed analysis of responses, in which even incorrect answers can provide information on the student's skills. 3. Lending itself well to computer scoring. In addition to the general characteristics of a good test item noted in Introduction to Test Items, there are some specific guidelines to follow when writing or evaluating multiple choice items. Some relate to the stem, some to the options.

Some of the characteristics is that a. The stem should clearly state the problem. A good stem is often clear enough that; A) competent student can answer the item correctly without seeing any of the options. B). The stem should contain as much as the item as possible, but no more. There is no point in redundantly repeating something in each option that can be stated in the stem. On the other hand, the stem should not wordy nor contain irrelevant information, known as window dressing. One exception would be a problem presented that requires the student to determine which facts presented are necessary to solve the problem and finally, C) The stem should, in most cases, be worded positively and in the active voice. When negatives do need to be used, they must be accentuated in boldface or ALLCAPS (Capital letters).

Various empirical studies are used to demonstrate the attitude of students towards multiple choice items. Orluwene and Otuata (2017) ^[7] investigated on the efficacy of multiple choice, alternative and completion objective test on students' achievement in Economics in Delta State. A 3X2 factorial quasi-experimental research design by post-test only was used as the research design. The instrument used for the study, Economics Achievement Test (EAT), was assessed for reliability through Kudar-Richardson formula 20 which yielded a coefficient of 0.87. A sample of 410 students gotten through criterion purposive sampling technique was used for the study by using intact class by drawing the students from five schools. Each of the intact class were given a specific test format. Data analyses were done using mean, standard deviation, independent t-test, two-way analysis of variance and scheffe test where appropriate. Result from the study showed that gender significantly influenced the differential effects of objective test formats on students' achievement in Economics. Again, objective test formats significantly affect students' economics achievement, and that there was a significant interaction effect between objective test formats and gender on students' Economics achievement.

Also, it has been observed that the issue of performance and how it is being assessed in Nigerian education has been a major source of concern to all the stakeholders in the education sector. This is because of the disparities in achievement and low academic performance of students as has been noticed by the researcher in recent time. Some perform very well when it is selection answer test while others perform better when it is supply answer type. On the other hand, inadequate facilities and some environmental factors tend to distort the process of measuring standardized instrument among students in school. That notwithstanding, the performance of students may indicate their attitude towards the assessment format used, most of them may either respond poorly in one assessment format to the others. The researchers have also noticed that the basic skill, knowledge and confidence required in most assessment format seems to be wearing away among students most especially in multiple choice questions and true/false questions in recent time. This is illustrated in the behavioural disposition of the students towards one assessment format or the other as it affects their examination. More so, some of the students complain bitterly on the use of multiplicity of the options in the multiple item format. Some have even noted that in some cases, the key to a particular item is not supplied thereby making it sure for them to fail such an item. On the other hand, some also noticed that some items put up as statements in a true or false item format are not even true neither are there false which makes their response to be void. In some instances, as well, some of the statements are so ambiguous or put in a phrase form that lack meaning which the students will respond to. All these pose a serious problem as noted by the researcher. On the contrary, all these unsatisfactory state of affairs may not be unconnected with the attitude.

Based on these, the study is built on investigating the attitude of undergraduate students towards the various assessment format in the University of Port Harcourt and specifically, it intends to;

1. Determine the proportion of male and female undergraduates with positive and negative attitude

towards Multiple-choice assessment format in the University of Port Harcourt.

2. Find out the proportion of male and female undergraduates with positive and negative attitude towards True/false assessment format in the University of Port Harcourt.

It will also ask the following research questions

1. What is the proportion of male and female undergraduates with positive and negative attitude towards Multiple choice assessment format in University of Port Harcourt?
2. What is the proportion of male and female undergraduates with positive and negative attitude towards True/false assessment format in the University of Port Harcourt?

With the following hypotheses

1. There is no significant difference in the proportion of male and female undergraduates who hold positive and negative attitude towards multiple choice assessment format in the University of Port Harcourt.
2. There is no significant difference in the proportion of male and female undergraduates who hold positive and negative attitude towards True/false assessment format in the University of Port Harcourt.

Methodology

The ex-post-facto research design will be used in the study. The researcher used a sample of six hundred (600) level 300 to 500 undergraduates of the University of Port Harcourt for the study. This was obtained using a multi-stage sampling method. Simple random sampling technique by balloting will be used to draw six faculties out of the 12 faculties in the institution. Therefore, non-proportionate stratified random sampling technique will be used to draw two departments from each faculty. This is because each faculty will represent a stratum hence a total of twelve departments was used for the study. To select the number of students from each department, another non-proportionate stratified random sampling/purposive sampling will be adopted whereby fifty (50) 300 to 500 level students was drawn from each department irrespective of the number of students in each department which will give a total of six hundred (600) students.

The researcher used a questionnaire called "Attitude of undergraduates to assessment format questionnaire" (AUTAFQ) for the study. This was developed by the researcher using the 4-point Likert Scale of Strongly Agreed to Strongly Disagree. In total, the instrument contains twenty (20) items in all. In order to identify students' attitude (positive or negative) the researcher had to put a minimum score of 10 and a maximum score of 20. For calculating students' attitude, the criterion mean of 2.0 will be multiplied by 10 which is the number of items in each sub-section which yielded a value of 20. Hence, any students that score 25 and above were considered as having positive attitude while those scoring below 25 was considered as having negative attitude.

Face content and construct validities of the instruments were done by giving it to two experts in Measurement and Evaluation in the University of Port Harcourt, along with the objectives of the study, research questions and hypotheses. They were all requested to make relevant

suggestions and identify if the instrument actually measured what it purports to measure. Their suggestions and opinions were integrated into the final version of the instrument. Since the instrument is a multivariate instrument, the analysis was done for each dimension before the total instrument. From the analysis done, the result yielded Cronbach Alpha values of 0.74 for the multiple choice section and 0.58 for the true/false section.

Reliability of the instrument was also done using the split half reliability technique was used. Result from the analysis showed that there was a correlations coefficient of 0.63 between the odd and even items, while a Spearman Brown coefficient of 0.78 was obtained for both half of this test.

Data collected with the help of research assistant from department in each faculty will be analyzed using mean ratings and comparing it with the grand criterion mean. Those with positive attitude to each format will be identified

if their score equals 25 or above points and vice versa as stated earlier under the instrument for data analysis. Also, the researcher adopted frequency, proportion and simple percentage to calculate these responses to ascertain male and female with positive and negative attitude towards the various format. Furthermore, the hypotheses were tested using Chi-square statistical technique.

Results

Research question one: What is the proportion of male and female undergraduates with positive and negative attitude towards Multiple choice assessment format in University of Port Harcourt?

Hypothesis 1: There is no significant difference in the proportion of male and female undergraduates of the university of Port-Harcourt with negative and positive attitude towards multiple-choice test format.

Table 1: Summary of 6x2 X² contingency table on the attitude of undergraduates towards Multiple-choice Test based on gender.

		AtMC * Gender Crosstabulation				Value X ²	df	p-value
		Gender		Total				
		Male	Female					
AtMC	negative	Count	52	45	97	.315 ^a	1	.575
		Expected Count	49.5	47.5	97.0			
		% within AtMC	53.6%	46.4%	100.0%			
		% within Gender	17.0%	15.3%	16.2%			
		% of Total	8.7%	7.5%	16.2%			
	positive	Count	254	249	503			
		Expected Count	256.5	246.5	503.0			
		% within AtMC	50.5%	49.5%	100.0%			
		% within Gender	83.0%	84.7%	83.8%			
		% of Total	42.3%	41.5%	83.8%			
Total	Count	306	294	600				
	Expected Count	306.0	294.0	600.0				
	% within AtMC	51.0%	49.0%	100.0%				
	% within Gender	100.0%	100.0%	100.0%				
	% of Total	51.0%	49.0%	100.0%				

From the data analysis shown in table 4.1, 52 male undergraduates representing 8.7% of the sample had a negative attitude towards multiple choice test format, while 254 male undergraduates representing 42.3% of the sample reported positive attitude towards multiple choice test format. For the females, it shows that 45 of them representing 7.5% of the sample had a negative attitude towards multiple-choice test format, while 249 representing 41.5% of the sample expressed a positive attitude towards multiple-choice test format, from the result, 97 undergraduates representing 16.2% of the population had negative attitude towards multiple-choice test format, while 503 undergraduates of 83.8% of the population had a positive attitude towards multiple choice test format.

The null hypothesis was tested using the analysis of chi-square. The Pearson chi-square of 0.315 with 1 degree of

freedom and p-value of 0.575 which is greater than 0.05 level of significance. Therefore, the null hypothesis that there is no significance difference in the proportion of male and female undergraduates of the university of Port-Harcourt with negative and positive attitude towards multiple-choice test format is retained.

Research question 2: What is the proportion of male and female undergraduates of the university of Port-Harcourt with negative and positive attitude towards True/false test format?

Hypothesis 2: There is no significant difference in the proportion of male and female undergraduates of the university of Port-Harcourt with negative and positive attitude towards true/false test format.

Table 2: Summary of 6x2 X² contingency table on the attitude of undergraduates towards True/false Test based on gender.

		AtTF * Gender Crosstabulation				Value X ²	df	p-value
		Gender		Total				
		Male	Female					
AtTF	Negative	Count	71	53	124	2.450 ^a	1	.118
		Expected Count	63.2	60.8	124.0			
		% within AtTF	57.3%	42.7%	100.0%			
		% within Gender	23.2%	18.0%	20.7%			
		% of Total	11.8%	8.8%	20.7%			
	Positive	Count	235	241	476			

		Expected Count	242.8	233.2	476.0			
		% within AtTF	49.4%	50.6%	100.0%			
		% within Gender	76.8%	82.0%	79.3%			
		% of Total	39.2%	40.2%	79.3%			
Total		Count	306	294	600			
		Expected Count	306.0	294.0	600.0			
		% within AtTF	51.0%	49.0%	100.0%			
		% within Gender	100.0%	100.0%	100.0%			
		% of Total	51.0%	49.0%	100.0%			

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 60.76.

b. Computed only for a 2x2 table

From the data analysis shown in table 4.3, 71 male undergraduates representing 11.8% of the sample had a negative attitude towards True/false test format, while 235 male undergraduates representing 39.2% of the sample reported a positive attitude towards true/false test format.

For the females, it shows that 53 of them representing 8.8% of the sample had a negative attitude towards true/false test format, while 241 representing 40.2% of the sample expressed a positive attitude towards true/false test format, from the result, a total of 124 undergraduates representing 20.7% of the population had negative attitude towards true/false test format, while 476 undergraduates of 79.3% of the population had a positive attitude towards true/false test format. From the table, the Pearson chi-square of 2.450 with 1 degree of freedom and p-value of 0.118 which is greater than 0.05 level of significance, therefore, the null hypothesis that there is no significance difference in the proportion of male and female undergraduates of the university of Port-Harcourt with negative and positive attitude towards True/false test format is retained.

Discussions

From the analysis done, there is a marginal difference in the proportion of males and females undergraduates with negative attitude towards multiple choice test format. Similarly, the proportion of males and females' undergraduates with positive attitude does not differ with a wide margin. This results implies that, male and female undergraduates do not differ significantly based on multiple choice test format, the results may have been possible due to the fact that both the male and female undergraduates are in the same form of instructions.

However, this researcher's opinion was that the females should have being more positively disposed towards multiple choice because it is relatively easier to guess. The findings from this result is not similar to that of Orluwene and Otuata 2017 who obtained a significant gender influence on multiple choice achievement in Economics, the difference in this results might have been attributed to the construct studied. While Orluwene and Otuata investigated achievement in multiple choice Economics, this study investigated the attitude of male and female undergraduates towards assessment format of which multiple choice is one of the assessment format studied. Another reason could be the sample used, this present study used the University undergraduates, while theirs was the secondary schools' students. The result in table 4.2 revealed that there was no statistical significant difference in the proportion of male and female undergraduates with negative and positive attitude towards True/false test format. The result indicates that 57.3% male undergraduates had negative attitude towards True/false test format, while 42.7% of the female had negative attitude towards True/false test format. This

shows that more of the males had negative attitude towards True/false than the females. Conversely, the result showed that more females had positive attitude towards True/false than the males, meaning that females may prefer True/false because they are relatively simple to answer. This result from this study is similar to that of Malakeyi (2009) that carried out a study on the relationship between objective questions, true/false questions and academic performance of secondary schools' students. He found out that there was a significant relationship between attitude towards true/false test format and achievement. Despite the similarity between this study and that of Malakeyi (2009), the statistical procedure used were different. While he used Pearson product moment, this current study used Chi-square statistics.

Recommendations

Based on the findings, it is recommended that;

1. Classroom teachers as well as test constructors and developers should ignore any call for multiple-choice item format differentiation based on gender as it is revealed that there is no significant difference in the attitude of male and female undergraduates towards this particular item format.
2. Test developers, test constructors and teachers should as well set true/false item format without taking into consideration the gender of the undergraduates as it is also revealed that there is no significant difference in the attitude of male and female students towards this particular item format.

Conclusion

Test item format or arrangement has been a factor that determines the attitude as well as the performance of undergraduates in examinations. In the higher institutions, this is also a major factor that determines the performance of the undergraduates. The gender of the undergraduates as well has no significant influence on how undergraduates perceive the various item formats.

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