

# CORRELATE OF ACADEMIC PERFORMANCE OF STUDENTS IN MATHEMATICS USING TWO DIFFERENT TEST FORMATS

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## Abstract

This paper examines the performances of students in Mathematics using two test formats. 100 students of SS1 were selected randomly from 5 secondary schools in Ikere-Ekiti as subjects for the research. Each of the students was assigned with each of the two test formats – Matching and Completion test formats. Three hypotheses were generated and tested at 0.05 level of significant. Result of the findings revealed that, there was a significant relationship in the performance of students in the two test formats. Finding also showed that there was no significant difference between the performance of boys and girls in the matching test format but a significant difference in the completion test format. It was recommended based on the findings that, emphasis should henceforth be shifted from the common type of objective, that is, the option type, YES/NO or TRUE/FALSE, to either or both completion or matching test formats. This will reduce the rate of cheating and other shortcomings often witnessed in the former type of objective test format.

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**Keywords:** Academic Performance; Matching test, Completion test, Text formats

I. The Nigerian state today and to any other countries worldwide recognizes education as an instrument for national development. However, one of the means of attesting to the level of development is to assess the outcome of our educational policies either in terms of products from the educational sector or other assessment parameters; and one of the most reliable channels of assessing the products is through administration of examination which is testing.

The importance of test in any educational sector therefore cannot be over emphasized. It is used to improve an individual and to inform him or her how he/she is faring in a learning

situation and to develop his/her potentials and intellect. Even in industries and other work contexts, tests are employed for selection, classification and other uses. Test therefore can be defined as the instrument used to elicit a sample of behaviour of an individual from which the total behaviour is inferred. Borisade (2000) opined that the world today is full of decision for and about persons in and out of schools in which test of achievement provided some relevant information. Some of these are decision of classroom teacher as to what to be taught to students or practiced by students. Other reasons for conducting test may be for diagnosing learning difficulties, political or for public decision on some educational issues.

Alonge (1989) also opined that a test is designed to measure such characteristics traits such as ability, aptitude and that achievement test should focus on how much an individual has accomplished on a course of instruction or training.

In view of the aforementioned points, administration of test at any level of our educational ladder can either mar or make the testees. It is thus highly imperative to view and continuously review our testing instruments. How valid and how reliable are they? How is it actually measuring what it is suppose to measure?

Indeed examination in all schools today is usually conducted in two test formats. Essay and objective test formats. As a result of the introduction of continuous assessment in schools, coupled with the continuous increase in student enrolment, conduct of examination in schools at all level now tends more towards the use of objective test format. It is a more useful and expedient assessment technique for evaluation of large student on a wide range of course content.

However, the most disturbing side of the issue is that the use of the objective test format has not in anyway reduced the rate of student poor performances in examinations. The question is what then is the problem? Is it that objective test format, which is mainly option? YES or NO and TRUE or FALSE type is faulty? Is it that the questions are not well structured or the teacher and students have not availed themselves with the required rudiments for setting and answering of questions? These are posers that are indeed begging for answer. Aside, findings have also revealed that this type of objective test format have not been very helpful because the degree and the extend of students preparation is always very low. There is no gain saying the fact that ill-prepared student for examination will result in nothing but poor performance and failure. It has also been discovered that, the system is prone to high degree of examination malpractice.

This researcher therefore was of the view that the hitherto used type of objective test format which is mainly option type, or TRUE or FALSE type or YES or NO type be

modified and employ the matching and completion type of test format. These two formats from experience will avail both the teacher and student to work, and prepare adequately for the examination.

Ebel (1979) opined that, matching and completion test formats are adaptable to the measurement of more important educational outcomes such as knowledge, comprehension and ability to solve problems. The importance and usefulness of matching and completion test format has indeed tend to more investigation by eminent scholars and professionals in the field of test and measurement such as Borisade (2008), Itsu (1979), Avarid (1969) e.t.c. These test experts and professionals recommend the use of matching and completion test format for examination either as substitute or along the other type of objective test formats.

It must also be noted that either of these two is relatively easy to construct by a skilful tester, and it makes possible measurement of a large amount of related materials in a relatively short time. This researcher no doubt is abreast with the fact that completion test format is relatively easy to prepare because it exclusively measure simple learning outcome relating to recall of information. Hence guess work is completely eliminated or at worse reduced. There is therefore an element of originality and involvement of personal effort in the response of student to the test items which is not always the case in option, TRUE or FALSE or YES or NO test formats.

### **Statement of the Problem**

It is a well acclaimed fact that students' preparedness for examination nowadays is dwindling. A reason for this of course is not far fetched. It is partly traceable to type of test format in use which does not encourage hard work on the part of the testees. The report of most of the continuous assessment results in schools, is noting but fake. Too much prone to subjectivity, highly vulnerable to examination malpractice, as student who have not prepare can still score high mark in either option type of test format or TRUE or FALSE or YES or NO type of test formats.

The researcher therefore is of the opinion that if matching or completion type of test format is introduced, there is tendency for more active preparation for examinations by the testees. It is on the basis of this that, this paper sought to correlates the academic performance of students in mathematics using matching and completion test formats so as to authenticate the claim expressed here.

## Hypothesis

On the bases of the stated problems the following hypotheses were formulated

1. There was no significant relationship between the academic performances of students in mathematics using the two test formats.
2. There was no significant difference between the academic performance of boys and girls using matching test format.
3. There was no significant difference between the academic performance of boys and girls using completion test format.

## Research Method

The student for this study consisted of 100 senior secondary school one (SSS1) students. They were randomly selected from five schools in Ikere Local Government Area of Ekiti State, Nigeria. The subjects were assigned the two test format and each of them consisted of 40 equivalent items.

The content validity of the instruments were enhanced as it conformed with the senior secondary school one syllabus. While the reliability coefficient of  $r = 0.54$  was obtained for the completion test items and  $r = 0.56$  was obtained as reliability coefficient for the matching test items.

Data collected were then analyzed and subjected to statistical analysis, such as, frequency counts, mean scores and standard deviation. T – test statistical instrument was also employed to test the hypotheses.

## Result and Discussion

**Hypotheses 1:** There was no significant relationship between the academic performances of student in mathematics using the two test format.

This hypothesis was tested by finding the correlation coefficient of the scores of students in each of the test format. The computed correlation coefficient was again subjected to t-test and z-test so as to ascertain whether or not the computed  $r$  -0 values actually represent the true result.

Table 1: relationship between the academic performance of students in the two test formats.

Format	No. Student	- X	SD	DF	t-calc	t-critical
Completion	100	19.4	6.24			1.96

test				98	2.92	
Matching test	100	16.8	6.35			

From the table, the t – calculated value of 2.92 was obtained, while the table value was 1.96 at 98 degree of freedom. This showed that the t-test, calculated is greater than the table value, hence the hypothesis is rejected. This implies that, there was a significant relationship between the academic performances of students in mathematics using the two test formats.

When the result was further subjected to z-test so as to ascertain the genuineness of the scores, the result obtained is as indicated in table 2 below.

Table 2:

Format	No. Student	DF	Z-calc	t-critical
Completion test	100	98	12.71	1.98
Matching test	100			

The result as presented in table 2 showed that the Z-calculated of 12.71 is greater than the t-critical of 1.98. Hence the hypothesis is again rejected. That is there is a significant relationship in the academic performance of the students in mathematics using the two test formats.

**Hypothesis 2:** There was no significant difference in the academic performance of boys and girls in mathematics in matching test format.

Table 3:

Sex	N	- X	SD	DF	t-calc	t-critical
Boys	48	15.2	6,74	98	1.86	1.96
Girls	52	12.8	6.13			

The result of the table showed that the t-calculated of 1.86 is less than the table value of 1.96 at 0.05 level of significant, which means that the hypothesis should be accepted. That

is there was not statically significant difference in the academic performance of boys and girls in mathematics, using matching test format.

**Hypothesis 3:** There was no significant difference in the academic performance of boys and girls in mathematics, using the completion test format.

Table 4: Differences between the academic performance of boys and girls in mathematics in the completion test format.

Sex	N	- X	SD	DF	t-calc	t-critical
Boys	48	17.41	6,7	98	2.61	1.96
Girls	52	13.98	6.4			

To test this hypothesis, the mean and standard deviation of the raw scores of boys and girls were found. This was again subjected to t-test statistical analysis to ascertain the extent of difference in their academic performance. The mean score and standard deviation were found to be 17.41 and 6.7 for boys and 13.98 and 6.4 for girls respectively. The result showed a better performance of boys than girls. On the application of the t-test statistical instrument, the t-calculated value of 2.61 was obtained and this is quite significant at 0.05 level of significance. This by implication means that, there is a significant difference between the performance of boys and girls. The null hypothesis is therefore rejected at ( $P < 0.05$ ).

## Discussion

The result of the first hypothesis confirmed the fact that there is a significant relationship between the academic performances of the students in the two test formats. It need reiterated further that the relationship is a pointer to the fact that whichever the types of objective test formats employed to test the ability of the students they are expected to be significantly related. Be it matching option type and if compared with completion type they are related.

Empirical studies by professionals and test construction experts such as Alonge (2003). Green (1979) e.t.c. opined that teacher's method of assessment should be such that students are not given zero out rightly. It thus implies that in the use of either matching or completion test formats there is tendency for the testee to have score. Unlike YES or NO, TRUE or FALSE or even the option type, there is possibility of scoring zero.

The results of hypotheses two and three showed that there was no significant difference in the academic performance of boys and girls using matching type of test format, but there is a significant difference in their performances when completion type of test format was employed. Also there was a better performance on the part of the boys than girls when completion test format was employed. Differences in the result of the two test formats between boys and girls could be due to some factors. It could be that boys are generally known to perform better than girls in mathematics related courses or that boy has the first hand information of the investigation before the administration of the test. It may be due to internal factors, environmental factor or administrative factors.

Also, the level of preparation for the test by either of the two sexes will definitely have an impact on the result. Since the test items are equivalent, it showed that boys prepared adequately more than girls during the administration of the completion test format.

However, this result actually attested to the finding of Borisade (1997), that there exists a significant difference in the difficulty index of the two test formats. From this finding, it shows that both test formats could be conveniently employed by the classroom teacher for the assessment of learning outcome. It has been adjudged, that the two test formats would bring about better preparation for the test on the part of the testees which will definitely result in a better performance.

It was on this pretence that Oladunni (1996) attested to the use of both test formats as they specifically measure simple learning outcome.

### **Conclusion and Recommendation**

The use of either matching test format or completion test format will significantly bring about the desired result so much expected from the continuous assessment result in schools. The level of subjectivity of the hitherto results of continuous assessment from schools will be minimized, on the part of the teacher and testee, and adequate preparation could also be enhanced. There is room for independent work, as it reduces giraffing and other minor sharp practices often witnessed during the conduct and administration of the other type of objective test formats. That is yes or no type, option type or true or false type.

Teachers should therefore start to develop interest in the use of the two test formats so as to bring into lime light the stated objectives behind the introduction of continuous assessment in schools. On the part of management of education and government generally, funds and other logistics should be made available so as to enhance proper and genuine implementation and administration of both or any of the two test formats. Teachers at the

primary or secondary schools should try as much as possible to improve on their usage. Emphasis should henceforth be shifted from the common type of objective test format which has indeed been proved ineffective judging from its shortcomings and inability to meet the desired result especially on the issue of continuous assessment in schools. Government and other examination body such WAEC or NECO should be making use of the two test formats more than before so as to bring into lime light their importance. Teachers at any level of our education ladder need to be.

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