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Analysis of Teachers' Experience and the Application of Testing Skills among Senior Secondary Schools Teachers

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ABSTRACT

This study seek to find out how teachers experience in Senior Secondary Schools influence the application of the skills of test planning, preparation, administration, scoring, interpretation and item analysis in Okene Local Government of Kogi State of Nigeria. A sample of 100 out of a 366 population of teachers was selected using simple random techniques. A 24 item 4 – option Likert – type questionnaire was used for data collection and the reliability was 0.68. Six hypotheses were formulated to guide the study and were tested using one – way ANOVA. The following results were obtained; there is significant influence of teaching experiences on the application of testing skills of test preparation and test item analysis used in this study in favour of those teachers with long experience, while there is no significant influence of teaching experiences on the application of testing skills of test planning, administration, grading and interpretation. The implication is that teachers with low experiences need re-training, refresher courses, and mentoring by the highly experience teachers on test preparation and test item analysis which are more technical, for effective performance in external examinations (WASC, NECO and JAMB) in Nigeria, especially the study area Okene Local Government of Kogi State.

Keywords: Testing, Skills, Construction and Assessment.

INTRODUCTION

What makes teachers special in our education system is the position they occupy in the education system, because it is their duty to determine who is fit for education, from entry point to finishing point in any level of education. They do this through testing, measurement and evaluation. Considering the position of teachers both in the school and in the public, it can be concluded that teachers have enormous task of reporting to students, parents and the society what is going on in the school system, especially how they have carried out their responsibility in evaluation of students. To equip teachers for this enormous task, they are at one time or the other in their various levels of educational training exposed to the rudiment of testing, through educational tests and measurement as a prerequisite for graduation from teachers training via higher learning institution. The basic reason behind such exposure is to equip the teachers with the skills of testing so that in the course of teaching, they can obtain valid, reliable and useful information concerning learners' achievement. Therefore it is important that teachers should harness the various testing skills during testing. Having being armed with testing skills, teachers are expected to determine what is to be learned and then define same in such manner that the testing items constructed by them should evoke desired performance and serve useful purposes. Right assessment of learning is an essential aspect of teaching and learning process. In addition to assess whether the objectives of learning have been achieved, test also serves the purposes of classification, guidance and counseling and research (Grondlund, 1985; Denga, 1987).

It is important to stress here that the likelihood of preparing valid, reliable and useful tests is enhanced when the teacher has in the process of testing seen the need to apply all the skills of testing. These testing skills include; test planning, preparing the test items, carrying out test analysis, test administration, grading the test and interpreting the test results. These skills apply to all types of tests – placement, diagnostic, formative and summative. It is therefore necessary that all teachers should have as well as apply these skills in their interactions with learners if success is the target in the teaching and learning enterprise. Teachers experience has been found to contribute to the measure of teachers quality that affect the quality of students output. Rivkin, Hanushek, and Kain (2005) found little difference in teacher effectiveness after about five years of experience. In other words, there is little or no difference between what contribute to teachers quality after attaining five years of teaching experience.

Test planning, construction and preparation need careful consideration of specific purpose (s) of test, since test serves many different purposes. An ideal construction of any test must begin by defining the variables or constructs to be measured and specifying the test content (Grondlund, 1985). It therefore most needful that test designers particularly teachers adhere rigidly to a formal taxonomy specifying the objectives to be measured by a test. No matter how careful a test is planned and constructed, the result will be useless unless it is administered and scored properly. Although the skills, personality, and behavior of an examiner during testing can influence how well examinees perform. The performance of the examinees is further enhance when other situational variables; the time and place of testing and environmental conditions such as illumination, temperature, noise level, and ventilation are properly put in place Ali (2015). The other skill in testing, normally regarded as grading and interpretation of the test. It could be defined as the assignment of grades or marks. For interpretation of test scores, procedures can be quite complex depending on the type of test and purposes for which the test is administered.
However some studies have shown that lecturers teaching experience does not impact significant difference in application of testing skills, as discovered by Ali (2015). It is therefore worthy while to undertake this study with the aim of finding the situation with secondary school teachers. Furthermore Levenhal (1997) found out from his study that 61 percent as opposed to 39 percent was the ratio of students achievement taught by less experienced (61%) and more experience teachers respectively. He therefore concluded that teachers' long experience has no significant positive effect on students' achievement. Onyekwu (1989) also found out that less experienced teachers in the aspects of test planning and scoring do better. Further confirmation of what the situation is with secondary school teachers becomes necessary, this is because the popular notion that experience in any area of practice is considered better than inexperience in such area.

THEORETICAL FRAMEWORK

The Classical Test Theory (C.T. T) is relevant to this study. The main idea of C. T. T in educational measurement is that score is viewed as having two components; the actual score and error score represented by this formula, i.e $X = T \pm E$, where X is the observed score (the score given to the testee based on his/her response to the test items), T is the true score (the actual score or true performance of an individual, all things being equal), while E is the error score. Akpan (1995) further stated that C. T. T has remained the most widely used basis for measurement in education, especially with respect to the construction and administration of tests. We could deduce from this theory that an increase in error score is as a result of teachers' inability to properly apply testing skills. The error score in any individual score give false impression about the students' performance.

STATEMENT OF THE PROBLEM

Having obtained the skills of testing, teachers are expected to utilize them effectively in the classroom situation thereby producing students who are totally developed. It is very important that the teachers must inculcate the culture, attitude and skills of testing in testing their students. It becomes necessary that teachers with various levels of experiences be assessed to find out how they apply the skills of testing in their dealings with their students during testing, hence the need for this study.

PURPOSE OF THE STUDY

The purpose of this study is to evaluate the influence of teachers experience on application of testing skills among secondary schools teachers. The specific objectives therefore are; how teachers experience influences testing skills of planning, preparation, item analysis, administration, grading and interpretation.

RESEARCH QUESTIONS

The following research questions were formulated to guide the test;

i. To what extent does teaching experience influence test application of test planning skill?
ii. To what extent does teaching experience influence test application of test preparation skill?
iii. To what extent does teaching experience influence test application of test administration skill?
iv. To what extent does teaching experience influence test application of test scoring skill?
v. To what extent does teaching experience influence test application of test interpretation skill?
vi. To what extent does teaching experience influence test application of test item analysis skill?

HYPOTHESES OF THE STUDY

Based on the research questions, six hypotheses were also formulated and tested at 0.05 level of significant;

1. There is no significant influence of teaching experiences on the application of test planning skill
2. There is no significant influence of teaching experiences on the application of test preparation skill
3. There is no significant influence of teaching experiences on the application of test administration skill
4. There is no significant influence of teaching experiences on the application of test scoring skill
5. There is no significant influence of teaching experiences on the application of test interpretation skill
6. There is no significant influence of teaching experiences on the application of test analysis skill..

SIGNIFICANCE OF THE STUDY

The result of this study will be of immense benefits to school administrators, teachers, students, guidance counselors, policy makers and implementers. It will further enhance curriculum planning and evaluation, and programme evaluation improvement.

RESEARCH DESIGN

Since the independent variables have already occurred and the researcher did not have a direct control of independent variables, the study was therefore based on Ex-post facto research design as recommended by (Denga and Ali, 1988).

RESEARCH AREA

The area of the study is Okene Local Government Area of Kogi State. It is located in central senatorial district of the state. They speak Ebira language and are called the Ebiras. Okene local government area shared boundaries with the following Local Governments Area; Ogori – Mangogo, Ijumu, Ajaokuta, Lokoja, Okehi, Adavi and Edo State.

POPULATION OF THE STUDY

The population of this study comprises of all senior secondary teachers in the local government area which is 401 as at 2014/2015, in sixteen (16) schools (Zonal Director: 2015).

SAMPLING AND SAMPLING PROCEDURE

From the total of 366 teachers spread across the 16 schools, samples of 100 teachers used were selected through simple random sampling.

INSTRUMENT FOR DATA COLLECTION

The questionnaires consist of 24 items generated from each of the six skills in testing. The items in the questionnaire were presented in the form of statements and teachers were required to indicate the frequency to which they apply the skills as

implied by the statements. A four point scale was used ranging from very often (4), often (3), rarely (2) and very rarely (1). The face and content validity was confirmed appropriate by experts.

RELIABILITY

Split – half reliability was used for estimation and the result for each testing components ranges from 0.64 to 0.77, while that of overall testing skill was 0.68. These values were considered high enough to justify the use of the instrument for the study. The result is reflected on table 1 below.

Table 1: Split half reliabilities of testing skills measuring instrument subscales

S/N	Variable	Nature of question	Number of items	N	R_{xy}
1.	Test planning	Odd (x) Even (y)	4 4	40	0.68
2.	Test item preparation	Odd (x) Even (y)	4 4	40	0.78
3.	Test administration	Odd (x) Even (y)	4 4	40	0.64
4.	Test scoring	Odd (x) Even (y)	4 4	40	0.77
5.	Test interpretation	Odd (x) Even (y)	4 4	40	0.60
6.	Test item analysis	Odd (x) Even (y)	4 4	40	0.65
7.	Overall testing skills	Odd (x) Even (y)	4 4	40	0.68

DATA ANALYSIS AND RESULTS: The data analysis and results obtain are reflected on tables 2 to7. **Hypothesis one:** There is no significant influence of teaching experiences on the application of test planning skill. The analysis for this hypothesis is shown on table two.

Table 2: One – way Analysis of Variance (ANOVA) of the influence of teacher's experience on the application of the skill of test planning among secondary school teachers in Okene Local Government of Kogi State

Group: Experience	**N**	$\bar{X}$	**SD**	
1. 1 -5yrs	46	19.39	2.18	
2. 6 -10yrs	17	20.24	1.30	
3. 11 – 15yrs	11	21.18	1.54	
4. 16 – Above yrs	26	19.51	2.33	
Source of variation	SS	Df	MS	F-ratio
Between groups	39.49	3	11.16	2.67
Within groups	401.04	96	4.18	
Total		**99**		

*P< 0.05, Critical $F_{3,96}$ = 2.70

The F calculated (2.67) is lesser than the F critical (2.70), the null hypothesis is therefore accepted instead of the alternative. In other words, the teachers irrespective of teaching experience do take their time to plan their test to suit the scheme of study. This is also supported by their means, they have closer range mean, and even the value of F calculated (2.67) is almost equal to the value of F critical (2.70), a difference of 0.03 which shows that they all applied the skills almost at equal level.

Hypothesis two: There is no significant influence of teaching experiences on the application of test preparation skill. The analysis for this hypothesis is shown on table two.

Table 3: One – way Analysis of Variance (ANOVA) of the influence of teachers experience on the application of the skill of test preparation among secondary school teachers in Okene Local Government of Kogi State

Group: Experience	**N**	$\bar{X}$	**SD**	
1. 1 -5yrs	46	20.43	2.60	
2. 6 -10yrs	17	18.12	2.15	
3. 11 – 15yrs	11	18.82	2.86	
4. 16 – Above yrs	26	19.46	1.86	
Source of variation	SS	Df	MS	F-ratio
Between groups	76.62	3	25.54	4.50*
Within groups	545.17	96	5.89	
Total	**621.70**	**99**		

*P< 0.05, Critical $F_{3,96}$ = 2.70

Table three reveals that there is a significant influence of teaching experience on the application of test preparation by senior secondary teachers in Okene local government area. Since the calculated value of 4.50 is greater the critical value of 2.70 at 3, 96 degrees of freedom. From this result, the skills of test preparation are significantly influence by teaching experience.

It becomes necessary to determine exactly which of the pairs of length of teaching experience differ significantly from each other. Going by the mean, teachers who have served for (1 -5yrs) has the highest mean of 20.43, followed by those who have taught for above 16years. This may not be far from the truth, since new zeal on the job can motivate the young teachers to do well. Also those teachers that are older in the service, psychological they will want to impress those under them, especially test preparation.

Hypothesis three: There is no significant influence of teaching experiences on the application of test administration skill. The analysis for this hypothesis is shown on table four.

Table 4: One – way Analysis of Variance (ANOVA) of the influence of teacher's experience on the application of the skill of test administration among secondary school teachers in Okene Local Government of Kogi State

Group: Experience	**N**	$\bar{X}$	**SD**	
1. 1 -5yrs	46	20.43	2.74	
2. 6 -10yrs	17	20.18	2.38	
3. 11 – 15yrs	11	19.91	2.63	
4. 16 – Above yrs	26	19.54	1.63	
Source of variation	SS	Df	MS	F-ratio

Between groups	13.85	3	4.618	0.784
Within groups	545.15	96	5.88	
Total	**579.00**	**99**		

P> 0.05, Critical $F_{3,96}$ = 2.70

Table 4 is an indication that there is no significant influence of teaching experience on the application of test administration skill. Since the calculated F value of 0.784 is less than the critical value of 2.70. going by the their means, there is a close range in their means. **Hypothesis four:** There is no significant influence of teaching experiences on the application of test scoring skill. The analysis for this hypothesis is shown on table two.

Table 5: One – way Analysis of Variance (ANOVA) of the influence of teachers experience on the application of the skill of test grading among secondary school teachers in Okene Local Government of Kogi State

Group: Experience	**N**	$\bar{X}$	**SD**	
1 -5yrs	46	17.39	2.56	
6 -10yrs	17	18.47	3.54	
11 – 15yrs	11	17.45	0.93	
16 – Above yrs	26	16.54	2.14	
Source of variation	SS	Df	MS	F-ratio
Between groups	38.66	3	12.89	2.001
Within groups	618.38	96	6.44	
Total	**657.04**	**99**		

*P< 0.05, Critical $F_{3,96}$ = 2.70

From table 5, teaching experience has no significant influence on the application of test grading. The reason may be due to the fact that most schools has stated the criterion for grading, all the teachers need do is to adopt the stated criterion in his or her grading, whether young or old teacher. **Hypothesis five:** There is no significant influence of teaching experiences on the application of test interpretation skill and the analysis is reflected on table six.

Table 6: One – way Analysis of Variance (ANOVA) of the influence of teacher's experience on the application of the skill of test interpretation among secondary school teachers in Okene Local Government of Kogi State

Group: Experience	**N**	$\bar{X}$	**SD**	
1. 1 -5yrs	46	19.44	2.92	
2. 6 -10yrs	17	19.59	2.92	
3. 11 – 15yrs	11	19.00	2.32	
4. 16 – Above yrs	26	17.92	3.87	
Source of variation	SS	Df	MS	F-ratio
Between groups	44.69	3	14.90	1.51
Within groups	947.27	96	9.87	
Total	**991.96**	**99**		

*P< 0.05, Critical $F_{3,96}$ = 2.70

Teaching experience has no significant influence on test interpretation, since the calculated value of F (1.51) is less than the critical value of F (2.70). In other words, no difference exists between young and old teachers. **Hypothesis six:** There is no significant influence of teaching experiences on the application of test analysis skill. The analysis for this hypothesis is reflected on table seven.

Table 7: One – way Analysis of Variance (ANOVA) of the influence of teachers experience on the application of the skill of test item analysis among secondary school teachers in Okene Local Government of Kogi State

Group: Experience	**N**	$\bar{X}$	**SD**	
1. 1 -5yrs	46	20.00	1.98	
2. 6 -10yrs	17	20.12	1.76	
3. 11 – 15yrs	11	17.36	3.47	
4. 16 – Above yrs	26	19.38	2.58	
Source of variation	SS	Df	MS	F-ratio
Between groups	68.05	3		4.25*
Within groups	512.46	96		
Total	**580.51**	**99**		

*P< 0.05, Critical $F_{3,96}$ = 2.70

On interpretation of test item analysis, teachers experience count. The result on Table 7 show that there is a significant influence of teaching experience on test item analysis, test item analysis is a little bit technically complex in real practice. Therefore those who are older in teaching do better than those who are young in teaching, they therefore need mentoring by the old teachers

DISCUSSIONS OF FINDINGS

On the extent of teachers' application of testing skills; test planning, test preparation, test administration, test grading, test interpretation and test item analysis, the teachers are significantly applying testing skills. In other words, teachers significantly apply the skills in there interaction with students for their evaluation.

However, the characteristics of teachers may not apply these skills equally, on each component of the skills and the overall. Therefore, teaching experience was further studied in relation to how they affect the application of these skills.

On teachers experience and the application of test skills of planning, preparation, administration, test grading, test interpretation and test item analysis), the result shows that there is significant influence of teachers experience on test preparation, test analysis. But on the overall, there is no significant influence of teaching experience on application of testing skills. The implication of this finding is that experience does not really matter, when it comes to application of testing skills of planning, preparation and administration. This result is agreement with Onyekwu (1989) who found out that less experienced ones in the aspects of test planning and scoring do better. This may not be far from the true situation, psychologically less experience teachers are full with vigour, more anxious and excited than the experience ones. He further stated that the less experienced teachers are more strict and severe when it comes to skills of test administration. The findings is also in agreement with (Levenhal, 1997) who found from his study that 61 percent as opposed to 39 percent was the ratio of students

achievement taught by less experienced (61%) and more experience teachers respectively. He therefore concluded that teachers' long experience has no significant positive effect on students' achievement.

CONCLUSION

Conclusively, teachers experience is found to influence the extent to which teachers apply two (test preparation and item analysis) out of the six identified testing skills; planning, preparation, administration, grading, item analysis and interpretations.

RECOMMENDATION

Based on the findings, it is recommended that teachers with low experiences need re-training, refresher courses, and mentoring by the highly experience teachers on test preparation and test item analysis which are more technical, for effective performance in external examinations (WASC, NECO and JAMB) in Nigeria, especially the study area Okene Local Government of Kogi State and in any other countries.

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