

**THE EFFECT OF NUMBER RIGHT AND CONFIDENCE SCORING METHODS ON
MULTIPLE CHOICE AGRICULTURAL SCIENCE TEST SCORES**

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ABSTRACT

The study examined the effect of two Scoring Methods on Multiple Choice Agricultural Science test scores in order to find the most acceptable method to be used. The combination of survey type and one short experimental design was used. Six (600) hundred students were selected by stratified random sampling technique in South Western Nigeria. Two hypotheses were generated and tested at 0.05 level of significance using one way analysis of variance and correlation analysis. The result of the analysis showed that there was a significant difference in the academic performance of students in two scoring methods in multiple choice Agricultural Science test scores. There was a significant relationship between the performance of students whose scripts were marked with number right scoring method and those marked with confidence scoring method. It was also revealed that there was a significant relationship between number right and confidence methods. The study revealed that number right scoring was the best method that favoured the scoring of the students' scripts in multiple choice agricultural science test scores. On the basis of these findings, number right scoring method should be adopted because it is not a new scoring method used by the teachers and is very easy for students to guess the items right. And it's straight forward for scoring multiple choice tests.

Keywords: Scoring, multiple choice, achievement, administer, correlation, partial knowledge.

1.1 INTRODUCTION

Scoring method is a process of assigning marks on the correct or wrong answer to an option, this option is an alternative provided in an objective test item from which a testee is to select the correct answer. There are various methods of scoring but the researcher is examining number right and

confidence scoring methods on multiple choice agricultural science test scores. Number right scoring method is the process of awarding one mark to each right answer in a multiple choice.

$$S_1 = R$$

Where R = right answer and S_1 = score.

Ebel (1965) supported the number right scoring method as the simplest way of assigning mark to objective test item. However, Ried (1977) argued that the tendency to award one mark to each right answer in objective test item is an upward bias in scores especially for student with low cognitive ability.

Confidence scoring method according to Ajayi(2007) is the method in which testee has to indicate on his answer script the level of certainty with which he attempts a test item, subject responses would be scored thrice with the exclusive of the answers made up random guessing. Testees response will therefore be based on his degree of certainty. The confidence scoring method was proposed by Soderquist (1936) who argued that in scoring objective test items, three levels of confidence must be taken into consideration. The three levels are absolute confidence, partial knowledge and random guessing. The absolute confidence is a response given with confidence of the correct information required that is, the testee answers the item based on the confidence he has on the answer to the item. The partial knowledge is the response given with some doubts on the basis of information required while blind guessing is the random selection of response without any information required. The scoring of this method is too cumbersome and time consuming.

A multiple choice item is the one that has two parts, in which the stem consists of direct question or an incomplete statement and two or more options consistency of answers to the question as completions of the statement. It is a good measuring instrument for measuring complex outcomes in the knowledge, understanding and application areas is generally recognized as the most widely applicable and useful type of objective test item. A test may contain several items, each item tends to confront the testee with a task to provide a means for observing its response to the task. Tests are instruments of measurement which are usually designed for a specific purpose. It is not too much to say that test has little value if the score derived from it at one time varies from the score obtained from it in another time under similar condition.

Objective tests are otherwise called the selection type. It involves presenting to examinee questions and alternatives. The testees are to make a free choice of one correct or best answer from the alternatives given an answer to a question.

1.2 RESEACH QUESTIONS

The following research questions were raised:

- (1) Will there be any difference in performance of students due to the two scoring methods?
- (2) Will there be any relationship between the performance of students whose scripts were marked with number right scoring method and those marked with confidence scoring method in multiple choice agricultural science test scores?

1.3 RESEARCH HYPOTHESES

The following null hypotheses were generated and tested in this study.

HO₁: There is no significant relationship between the performance of students whose scripts were marked with number right scoring method and those marked with confidence scoring method in multiple choice Agricultural Science test.

HO₂: There is no significant interaction effect on the school location and the type of school in multiple choice Agricultural Science test scores.

1.4 METHODOLOGY

The research design used in this study was the survey type. The design enabled the researcher to describe the effect of number right and confidence scoring methods on multiple choice agricultural science test scores. The population for this study consisted of selected Senior Secondary Schools three (SSS3) students who offered Agricultural Science in Ekiti, Osun and Ondo States.

The samples of 200 students were randomly sampled from each state, making a total number of 600 students in three states in South Western Nigeria.

The instruments for collecting data were made up of 60 items with four alternative options to each of the test item, A,B,C,D with different instructions and different methods of scoring.

The tests were drawn from standardized achievement test constructed by the West African Examinations Council (WAEC) between 2000 and 2004.

The multiple choice agricultural science test items containing 60 items was administered to students in selected Senior Secondary Schools in three States in South Western Nigeria. Ten (10) Senior Secondary Schools from each State was selected with a student population of 20 per school resulting to 200 students per state. The researcher collected the scripts and scored the testees using number right scoring method. In number right, the right option was scored and counted

the total number of right answers picked by the testees was placed on all over the total number of the items

$$S_1 = R$$

Where R = right answer and S_1 = score.

According to Ebel (1965), if objective item has four options A, B, C, D and that the key is B only the correct answer would be assigned one mark (1 mark). He proposed that the simplest way of assigning mark to objective test item is number right scoring method.

In confidence scoring method the testee answers the item based on the confidence he has on the answer to the item, the tester scored the testee. While in the partial knowledge, this is the response given with some doubts on the basis of information required, in the third level, testee randomly selection of response without any information required.

Each level is assigned a mark as follows:

Absolute confidence + Correct response = 1 mark

Partial knowledge + Correct response = 0.75 mark

Random guessing + Correct response = 0 mark

1.5 DISCUSSION

The results from the data analysis were discussed on the basis of the stated research hypothesis. The findings of this study showed that the number right scoring method and confidence scoring method had no significant relationship. The finding is in congruence with Ajibola(2003). In her findings number right score appears quite inadequate to capture a student cognitive status in a multiple choice agricultural science test scores. Odeyemi(2003) went further that the effect of confidence scoring on the reliability of multiply choice was significant at 0.05 level.

It was found that confidence scoring method least favours the students. Abu-Sayfand Diamond(1976) investigated the effect of confidence level in multiple choice test answers on reliability and validity of scores and found that tests scored with absolute confidence had greater reliability and validity than score at other level of confidence.

Boyinbode (1986) study the effect of confidence level on the same psychometric property of true-false test answer. He also found that the testees scores were most valid ($r=0.290$) when only answers were made on the basis of absolute confidence.

Omirin (2007) in his own view, the confidence scoring procedure reward partial knowledge of testees on multiple choice tests.

Alex, Strashny (2002) in his own study, he mentioned that scoring multiple choice test are better in differentiating the academic performance of students. Thus, form of multiple choice assessments provides an opportunity for the teacher to see if the student really know the answer or is just guessing. Richard (2003) opined that multiple choice tests can be scored in two ways to promote low level of thinking and higher level of thinking.

1.6 CONCLUSION

Based on the result of this study, the following conclusions were drawn. The use of number right scoring method in multiple choice agricultural science test scores favour the students than confidence scoring method. Number right scoring method is the easiest method of scoring and common method used in all institutions of learning.

1.7 RECOMMENDATIONS

Based on the findings and conclusion of the study the following recommendations were made.

1. Number right scoring method is recommended for the Ministry of education, examination division and to transfer the idea to Junior Secondary Schools to make use of the method to score JSS (3) objectives test during their final examinations. The method is very easy to score multiple choice objective test items.
2. The schools in primary, secondary and tertiary institutions were used to number right scoring method and they should continue using it in scoring multiple choice agricultural science test scores.
3. Consultancy firms who conduct aptitude test for new employees and promotion exercise for their workers should make use of number right scoring method.

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Table (1):The overall performance of agricultural science students in number right and confidence scoring methods.

	No of Cases	Minimum	Maximum	Mean 60 marks	St. Deviation	Range	Z-Score	(%) Percentage Above the Mean
Number Right Scoring Method	300	11	46	26.85	6.006	35	-0.25	40%
Confidence Scoring Method	300	6	40	26.31	6.269	34	-0.33	37%

Table 1, shows that one hundred (100) students were selected per state to calculate the number right scoring method and confidence scoring method. The number right had the highest mean and percentage score of 26.85 (40%) while confidence scoring method had means and percentage scores of 26.31 (37%). Thus, it implies that the students performed best in number right scoring method than confidence scoring method.

Number right had the standard deviation of 6.006 with range of 35, this implies that number right scoring is more heterogeneous than confidence scoring method, that is number right scoring is more spread than others scoring method.

Number right method had the minimum score of 11 confidence scoring had the least minimum score and the least maximum score. This implies that number right scoring method favours the students more than confidence scoring method.

The z-score indicates that 40% scored above average in number right scoring method, but in confidence scoring method is below average. In the final analysis number right scoring method favours the students more while confidence scoring method least favours the students.

Table (2): showing the percentage of the best performance.

	No of Cases	Mean	Standard Deviation	(%) Percentage Above the Mean	
Number Right Scoring Method	300	26.85	6.006	40%	10% below average
Confidence Scoring Method	300	26.31	6.269	37%	13% below average

Table (2) shows that number right method had mean score of 26.85 with 40% while confidence scoring method was 26.31 with 37%. This shows that number right had the highest scores of 40% despite the fact that is not up to the average is still had the best results.

Testing of Hypotheses

HO₁: There is no significant relationship between the performance of students whose scripts were marked with Number right scoring method and those marked with confidence scoring method in multiple choice Agricultural science test.

Table (3): Correlation Analysis showing between Number Right and Confidence Scoring Method.

Variable	N	r _{cal}	r _{tab}
Number Right Scoring Method	300	0.222	0.195
Corrected Scoring Method	300		

P>0.05 (Significant Result)

The result in table (3) shows that the r_{cal} for the scores was 0.222 which is greater than the r_{tab} value of 0.195 alpha level. The r_{cal} is therefore significant. This shows that there was a significant relationship between number right scoring method and confidence scoring method in multiple choice agricultural sciences test scores.

Thus, the null hypothesis was rejected.

HO₂: There is no significant interaction effect on the school location and the type of school in multiple choice Agricultural Science test scores.

Table (4): Two-way ANOVA summary of the location and type of schools.

Source of Variation	Sum of Square	df	Mean Square	f_{cal}	f_{tab}
Corrected Model	14426.138	15	295.076	8.235	
Intercept	199863.164	1	199863.164	5577.763	
Location Type of school	28.182	1	28.182	0.787	
Error	13759.540	384	35.832		3.84
Total	287391.000	400			
Corrected Total	18185.678	399			

Table (4): shows that the F calculated was 0.787 which is less than F table of 3.84 at 0.05 level of significance. Thus, the null hypothesis was not rejected. This implies that location of school in rural or urban and type of school which is single or mixed had no significant interaction effect on the performance of students.