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EFFECTS OF FORMATIVE ASSESSMENT WITH FEEDBACKS ON RESPONDENTS ACHIEVEMENT IN SELECTED SUBJECTS IN NIGER STATE, NIGERIA

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Abstract

This study was designed to determine the effects of formative assessment with feedback on achievement of Upper Basic respondents in Niger State and Federal Capital Territory, Abuja. A pre-test, post-test, non-equivalent control group, quasi-experimental research design was adopted. The sample size for the study was 350. Two research questions posed and two null hypotheses tested at 0.05 level of significance guided the study. The instrument used for data collection was Social Studies and English Language Achievement Test (SSELAT). The instruments was also subjected to face validation by five experts in Social studies and English Studies. The achievement test was trial-tested to determine its psychometric indices and reliability coefficient. Test re-test reliability technique was used for the Achievement test and reliability coefficient of 0.80 was obtained using Pearson Product Moment Correlation formula. Mean was used to answer the research questions ANCOVA was employed to test the hypotheses. The finding revealed that respondents provided with feedback had a higher mean score than respondents without feedback in achievement test. Furthermore, the mean score of females provided with feedback was higher than the mean score of males in the achievement test. The differences in the mean scores of male and female students in the achievement test was found to be insignificant. Consequently, the researcher recommended that teachers should always provide feedback for respondents on every formative assessment carried out in the class. These findings will encourage the respondents to do better in the subsequent assessment and Ministry of Education and Administrators of secondary schools should always organize seminars, conferences and workshops to sensitize teachers on the importance of providing feedback to respondents during assessment.

Introduction

The introduction of Continuous Assessment (CA) in Nigeria made formative assessments mandatory for public school respondents in an attempt to shrink national achievement gaps and increase respondent academic success. However, it can be found that the country has not achieved its desired goal with respect to the introduction of continuous assessment due to various challenges. In addition, Nigerian respondents have shown little improvement over the last decade in basic subjects such as Social Studies mathematics and English studies (Burns, Klingbeil& Ysseldyke, 2010). These outcomes have left educators, administrators and policymakers searching for more effective methods of improving respondent learning outcome. Although, previous researchers have shown formative assessment to have a positive effect on respondent performance (Bergan et al., 1991; Black & Wiliam, 1998; Fuchs & Fuchs, 1986; Martinez & Martinez, 1992; Sadler, 1989; White & Frederiksen, 1998), it can be a time-intensive endeavour.

Formative assessment can be defined as frequent and interactive assessments of respondents' progress and understanding to identify learning needs and adjust teaching appropriately (Organisation for Economic Co-operation and Development [OECD], 2005). Properly administered formative assessment can provide useful data for educators so that they can understand in which areas their respondents are obtaining solid understanding and in which areas their respondents may need remediation. It can occur organically within a classroom setting in the form of discussion, observed group work, or simple respondent-teacher interaction. The information gathered from these types of formative assessments would need to be recalled by the instructor at a later time, which can easily lead to some respondents' remediation needs being forgotten. Furthermore, respondents who are struggling but do not vocalize their needs may not be apparent to the teacher until summative tests are administered. In situations such as these, a formative assessment system which provides feedback to respondents could prove to be a very useful tool for the instructor, assuring that data is collected and stored for all respondents in the class regardless of how much they speak up. Cizek (2010) argued that formative assessment is administered midstream, in the course of some unit of instruction with the primary purpose of one or more of the following to 1) Identify the respondent's strengths and weaknesses; 2) Assist educators in the planning of subsequent instruction; 3) Aid respondents in guiding their own learning, revising their work, and gaining self-evaluation skills; and 4) Foster increased autonomy and responsibility for learning on the part of the respondent.

As formative assessment is intended to evaluate respondents' understanding in order to adjust the method of instruction, it is only appropriate that it occurs throughout the course and not at the end. It is important to note, however, that assessments administered throughout the course of study are only truly formative if the results are used for the purpose of adjusting learning and instruction. This is an area which is often misconstrued and, as a result, often leads to the ineffective implementation of what is mistakenly thought of as formative assessment.

The rationale of this study is based on the assumption that formative assessments will enable respondents to identify their own strengths and weaknesses in order to use their time wisely to advance their learning. The researcher hopes to show that respondents will be able to adjust the levels of time and effort that they invest into different subject areas. This adjustment in study time and effort will also end up increasing their base learning levels beyond that of what they would be able to do without the formative assessments. This study was therefore designed to determine the effect of formative assessment with feedback on the achievement of respondents in some selected subjects in junior secondary schools.

Statement of the Problem

Summative assessments have been used as the parameter for identifying respondents' achievement. As a result, they have often become the focus of classroom instruction. This has led to the popular phrase "teaching to the test", which generally implies "that teachers are doing something special to help respondents do well on a test, often without helping them to better understand the underlying subject matter (Firestone & Shorrs, 2004). There is need for exploration on the use of formative assessment research which could hold implications for a comprehensive assessment system that would incorporate both forms, and would better serve the informational needs and educational interests of respondents, instructors, administrators and policy-makers (Perie, Marion & Gong, 2009). Hence, what are the effects of providing feedback on the achievement of respondents in some selected subjects in secondary school?

Research Questions

The following research questions were formulated to guide this study:

1. What are the mean achievement scores of respondents provided with feedback and those without feedback in English language and Home Economics assessment?
2. What are the mean achievement scores of male and female respondents provided with feedback in the assessment?

Hypotheses

The following null hypotheses tested at .05 level of significance guided the study:

HO_1: There is no significant difference between the mean achievement scores of respondents provided with feedback and those without feedback in the selected subjects

Ho_2: There is no significant difference between the mean achievement scores of male and female respondents provided with feedback in the selected subjects

Methodology

A quasi-experimental design was used for this study. Specifically, the pretest, posttest, non-equivalent control group design was adopted for the study. Thus, the study involved the use of intact classes because in a quasi-experimental design, the researcher does not randomly assign subjects to the treatment or control group, the treatment is applied or completely controlled when the observations are conducted as in a true experimental design (Becker & Maunsaiyat, 2004). The use of intact classes in a quasi-experimental design is supported by Akinboye (1983) who believes that learners in a secondary school class in most cases, form natural clusters having similar age, height and other attributes. Besides, true experimental design would require assigning learners randomly to classes and also learners to different treatments which will disrupt or disorganize the normal school programme.

The research design is illustrated using symbols as shown:

Experimental Group: $O_1 \times O_2$

Control Group: $O_1 - O_2$

Where; O_1 represents pre-tests

O_2 represents post- tests

X . Stands for the treatment (feedback)- stands for without treatment (without feedback)

The population for this study comprised 810 upper basic two respondents in some selected junior secondary schools in Bosso Local Government Area of Niger State. The data was obtained for 2016/2017 session from the register in the principal's office of each of the schools. A multi-stage sampling technique was used to select the sample for this study. The first stage involved a random selection of four schools from the list of selected schools. Thereafter, intact classes of the two schools, each was randomly assigned to either experimental or control group. In this case, upper basic two respondents, totaling 172 constituted the subjects in the experimental group, while upper basic two respondents totaling 148 constituted the subjects in the control group. The instrument used for data collection in

this study was Social Studies and English Studies Achievement Test (SSESAT). The SSESAT was used to test the respondents' achievement in the Social Studies and English studies. The SSESAT contained multiple choice items and was developed based on the content of Basic Education Curriculum. The SSESAT was administered on a random sample of 50 equivalent respondents in Government Junior Secondary school, Chachanga. After two weeks the test was re-administered to the same group. Pearson Product Moment Correlation coefficient was used to compute the reliability coefficient of the instrument. The reliability coefficient obtained for the SSESAT was 0.80. The formative assessment is composed of several parts: (a) instructions, (b) questions, and (c) feedback. The instructions for the assessment consisted of the purpose of the particular assessment, instructions on how to take the assessment, and possibly an example question for the assessment. The questions of each assessment were made of questions of type (a) multiple choice, (b) multiple select, (c) fill in the blank, (d) multiple fill in the blank, or (e) short answer. Feedback was provided for the respondents at the conclusion of their assessment. Once all answers were submitted, the respondent was shown the correct answers along with feedback. The feedback included either a description of why the correct response is correct for the context provided or it provided a reference to which the respondents may refer to further explanation of the correct answer. The respondents go through the feedbacks and the assessment can be retaken as many times respondents' wish. The respondent feedback was provided immediately after the test.

For Experimental Groups, the research assistants encouraged the respondents to read over the feedback and to take notes on areas in which they could improve. For Control Group, the respondents did not receive any form of feedback as a result of these assessments. This group was to act as a type of control that would allow for distinguishing whether the assessments in themselves were providing for any changes in learning outcome without the feedback. At the end of the assessment, SSESAT was administered on the respondents as post-test.

The teachers that taught each of the two groups subjected the respondents to pre-testing before treatment. The researcher marked the answer scripts of the SSESAT to obtain the respondents' scores on achievement before the treatment. These provided baseline data on each of the dependent variables (Achievement of the respondents) before the treatment. During the post-test and after the respondents have been provided with feedback on the previous test, the SSESAT that contained the same test items used in the pre-test were also administered by the teachers that taught each of the two groups. Answer scripts were provided for the respondents to fill in the correct answers for SSESAT. The researcher marked the answer scripts of the achievement test to obtain the respondents' scores on achievement after the treatment. The data collected from the pre-test, post-test, were analyzed using mean to answer the research questions. The null hypotheses were tested using Analysis of Covariance (ANCOVA) at 0.05 level of significance.

Results

Research Question 1

What are the mean achievement scores of respondents provided with and those without feedback in English Language and Home Economics assessment?

Table 1: *Mean of Pre-Test and Post-Test Scores of Experimental and Control Groups in the Achievement Test*

Group	N	Pre-test	Post-test	Mean Gain
		$\bar{X}$	$\bar{X}$	
Feedback Grp	172	4.85	33.60	28.75
Without Feedback Grp	148	4.77	17.71	12.94

Table 1 shows that the feedback group had a mean score of 4.85 in the pre-test and a mean score of 33.60 in the post-test, making a pre-test, post-test gain in feedback group to be 28.75. Without feedback group had a mean score of 4.77 in the pre-test and a post-test mean of 17.71 with a pre-test, post-test gain of 12.94. With this result, the respondents in the feedback group performed better in the achievement test than the respondents without feedback group.

Research Question 2

What are the mean achievement scores of males and female respondents provided with feedback in the assessment?

Table 2

Mean of Pre-Test and Post-Test Scores of Male and Female respondents provided with feedback in the achievement test

Group	N	Pre-test	Post-test	Mean Gain
		$\bar{X}$	$\bar{X}$	
Females	77	4.81	33.67	28.86
Males	95	4.91	33.48	28. 57

Table 2 shows that females had a mean score of 4.81 in the pre-test and mean score of 33.67 in the post -test making a pre-test, post-test gain of 28.86, while the males had a mean score of 4.91 in the pre-test and a mean score of 33.48 in the post-test making a pre-test, post-test gain of 28.57. With this result, females provided with feedback performed better than males in the achievement test.

Hypotheses

HO_1:There is no significant difference between the mean achievement scores of respondents provided with feedback and those without feedback

Table 3

Analysis of Covariance (ANCOVA) for Test of Significance between the Mean Scores of respondents provided with feedback and those without feedback in the Achievement Test

Source of Variation	Sum of Squares	DF	Mean Square	F	Sig of F
Covariates	12.860	2	12.860	1.394	.191
Pre-test	12.860	1	12.860	1.294	.191
Main Effects	19977.688	1	19977.688	2134.107	.000
Group	19977.688	1	19977.688	2134.107	.000*
Explained	19651.874	2	10231.102	1002.123	.000
Residual	2713.761	317	8.214		
TOTAL	2254.668	319	69.815		

***Significant at sig of F<.05**

Table 3 shows that the F-value for group is 2426.121 with significance of F at .000, which is less than .05. The null-hypothesis is therefore rejected at .05 level of significance. With this result, there is significant difference between the mean scores of respondents provided with feedback and those without feedback in the achievement test

HO_2: There is no significant difference between the mean achievement scores of males and female respondents provided with feedback in the selected subjects.

Table 4

Summary of Analysis of Covariance (ANCOVA) for Test of Significance between the mean Scores of Males and Females with Feedback in English Studies Achievement Test

Source of Variation	Sum of Squares	DF	Mean Square	F	Sig of F
Covariates	1.843	2	1.843	.507	.341
Pre-test	1.843	1	1.843	.507	.341
Main Effects	1.648	1	1.648	.424	.368
Sex	1.648	1	1.648	.424	.368
Explained	2.825	2	1.730	.486	.470
Residual	496.805	169	2.790		
TOTAL	490.635	171	2.804		

***Significant at sig of F< .05**

Table 4 shows that the F-value for sex stood at .424 with significance of F at .361, which is greater than .05. Hence, the null-hypothesis is not rejected at 0.05 level of significance. This result implies that there is no significant difference between the mean scores of male and female respondents provided with feedback in achievement test.

Discussion of Findings

The finding revealed that respondents provided with feedback had a higher mean score than those respondents without feedback in the achievement test. In the same vein, the analysis of covariance confirmed that the difference between the mean scores of respondents provided with feedback and those without feedback was significant. The significant difference is attributed to the treatment given to the experimental group. This finding indicated that provision of feedback during formative assessment has a positive effect on respondents' learning outcomes. This implies that the provision of feedbacks is more effective than without feedback in enhancing respondents' achievement in Social Studies and English Studies. The findings that provision of feedback has positive effect on respondents achievement is similar to the finding of Radford, (2010), who in his study found out that the provision of immediate feedback during assessment in teaching and learning of Brigham Young University respondents improved the respondents' achievement in mathematics and reading than the respondents without feedback. This means that formative feedback can be an effective tool for increasing learning outcomes for respondents. It can be shown that some teachers are able to use formative assessments to assist their respondents in increasing learning outcomes. In order to benefit from formative assessments, the teacher or respondent must take action (Ramaprasad, 1983; Sadler, 1989), respondents, who received feedback, primarily used their time to review the items they missed and to take note on references in which they could find support for the correct answer.

The analysis of covariance between the mean scores of males and females in the achievement test showed that the null

hypothesis was accepted. This means that there was no significant difference between the mean scores of males and females in the experimental group that were provided with feedbacks. Although, the mean scores of females was found to be higher than that of the males, but the difference was not high enough to be significant. The superiority of the mean score of females over that of males in the achievement test could be explained by the fact that females are naturally better assimilators, patient and pay more attention than males since study the feedback involve a lot of patience and attention.

Conclusion

The study concluded that frequent assessments appear to increase the learning outcomes of respondents, while the addition of formative feedback not only increases the learning outcomes, but also increased the attitude towards the positive with regards to taking the assessments,.Respondents achieved better when they were allowed to participate actively in the assessment procedure by interacting with teacher, learning environment and assessment materials through provision of feedback.

Recommendations

Based on the findings of this study, the following recommendations were made:

1. Teachers should always provide feedback for respondents on every formative assessment carried out in the class. This will encourage the respondents to do better in the subsequent assessments.
2. The curriculum provider and examination bodies should look for a way of incorporating the provision of feedback into the teaching and learning during assessments in our various institutions.
3. Ministry of Education and Administrators of secondary schools should always organize seminar, conferences and workshops to sensitize teachers on the importance of providing feedback to respondents during assessment.

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