Influence of Continuous Assessment in the Teaching of Mathematics in Secondary Schools in Edo State

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Abstract: This study examined the influence of continuous assessment in the teaching of mathematics in secondary schools in Edo State. Four research questions and hypotheses guided the study. The research employed a survey design. Seventy (70) mathematics teachers were randomly selected from a population of over (240) mathematics teachers in secondary schools in Edo State, Nigeria. A well structured likert type of questionnaire containing (20) items was employed while chi square goodness of fit was the major statistical tool used for data analysis. A co-efficient of 0.75 was obtained for the instrument using Cronbach high co-efficient reliability test. The results showed that the practice of continuous assessment has a significant relationship with students’ academic performance in mathematics and also help to motivate students’ in the teaching and learning of mathematics. Based on these results, conclusions and recommendations were made. Some of these are: The government should frequently organize workshops, seminars and conferences for serving mathematics teachers on the practice of continuous assessment in secondary schools. Institutions of higher learning should make continuous assessment a major course in their pre-service teachers training programme. The undergraduate education mathematics course should be widened to cover all aspects of continuous assessment.

Keywords: Influence, continuous assessment, teaching, mathematics, secondary schools.

INTRODUCTION

Continuous assessment has been defined by various evaluators and educators in several ways. Continuous assessment may be defined as a systematic process of determining what learner has gained from learning activities in terms of knowledge, thinking, reasoning and character development. It is an attempt to update a teacher’s record about his students’ so as to permit a cumulative judgment of the students’ performance (Bajah, 1984).

Yoloye (1984) also defined continuous assessment as a method of evaluating the progress and achievement of students in education at institutions. It is aim to get the true possible pictures of each students’ ability at the same time helping each student to develop his or her abilities to the fullest. It is a method whereby the final grading of students takes account in a systematic way of their whole performance during a given period of schooling.

Ezewu and Okoye (1981) viewed continuous assessment as a systematic and objective process of determining the extent of a students’ performance and all the expected change in his behavior, from the day he enters upon a course of study in a continuous and progressive manner to the end of such a course of study and a judicious accumulation of all pieces of information derived from this purpose with a view to using them to guide and shape the students in his learning from time to time and to serve s basis for important decisions about the child.

According to the Federal Government Handbook on continuous assessment (Federal Ministry of Education, 1985), continuous assessment is a mechanism whereby the final grading of a student in the cognitive, affective and psychomotor domains of behaviour systematically takes account of all his performance during a giving period of schooling. Such assessment involves the use of a great variety of modes of evaluation for the purpose of guiding and improving the learning and performance of the students.

This continuous assessment with its attributes as embedded in the above definitions has been in practice presently in Nigeria. However, Ekonye (2007), Nzewi (2000) and Eze (2000) observed that problems exist in the implementation of continuous assessment in all subjects including mathematics. Ekonye (2007) specifically mentioned that teachers do not possess the required competencies for implementation of continuous assessment. Eme (2005) on the other hand observed that the task is weighing the teachers down. Kanno (2005) also
attested that teachers focused their greatest attention on measuring cognitive attainment rather than affective and psychomotor behavior. Corroborating Kanno (2005), Mkpa (2003) earlier posited that there is still a preponderance of cognitive testing in the schools. All these findings point to the fact that teachers lack the techniques or instrument construction and use especially in the non-cognitive areas of human behavior.

The picture being painted above is not in anyway at variance with the practice of continuous assessment in mathematics. Lawal (2009) investigated the practice of continuous assessment among mathematics teachers in Lagos State. According to him, the problems hindering the practice of continuous assessment in mathematics are as follows: inadequate supply of teaching aids, inadequate supply of mathematics teachers, lack of instrument for non-cognitive behavior, lack of technical knowledge on the part of teachers, heavy teaching loads, inadequate time for test and recording, lack of interest and dodging of test. Among these problems, the dodging of assessment by teachers and students and continuous testing syndrome which has replaced continuous assessment seem to be most disturbing.

Egwa et al., (2009) also pointed out that mathematics teachers in Benue and Ondo States are unqualified to implement some aspects of the new mathematics curriculum in which continuous assessment is a part. According to them, out of the 30 mathematics teachers that constituted the sample for the study, 28% indicated that they use oral test, 100% indicated that they use written test while 97% and 100% of the respondents said that they use assignments and examinations respectively, as their mode of assessment. Therefore, based on Egwa et al. (2009), all assessment techniques used in schools are cognitively oriented. This finding shows that the continuous assessment being practiced in schools especially in mathematics is not comprehensive. It then implies that what is being practiced is continuous testing. Complementing this finding, Ipaye (2007) opined that most teachers do not have right qualification and training in educational assessment in primary and post primary schools, a situation that greeted the effective implementation of continuous assessment in our schools.

The study of Pennycuick (2000) revealed that the practice of continuous assessment has a significant relationship with students’ academic performance in mathematics. Gipps and Stobart (2003) posit that continuous assessment is democratic in nature in that it is used to encourage and motivate the students and make the assessment a positive experience. In support of this, Adeyegbe (2004) pointed out that continuous assessment encourage students to learn better, motivate them to study, reveal specific areas of learning difficulties and provide feedback to the students and teachers.

This study therefore highlights the influence of continuous assessment in the teaching of mathematics in secondary schools.

Research Questions:

- Is there any relationship between the practice of continuous assessment and the problems encountered by teachers?
- Does the practice of continuous assessment influence students’ academic performance in mathematics?
- Does teachers’ qualification/experience influence the smooth implementation of continuous assessment in mathematics?
- Is there any relationship between the practice of continuous assessment and students’ motivation in the learning of mathematics?

Hypotheses:

- There is no relationship between the practice of continuous assessment and the problems encountered by teachers?
- The practice of continuous assessment does not influence students’ academic performance in mathematics?
- Teachers’ qualification/experience does not influence the smooth implementation of continuous assessment in mathematics?
- There is no relationship between the practice of continuous assessment and students’ motivation in the learning of mathematics?

Method of Study: The study adopted descriptive survey research design. The sample size was made up of seventy (70) mathematics teachers randomly selected from a population of over two hundred and forty (240) mathematics teachers in secondary schools in Edo State. The study used data from Post Primary Education Board Benin City as source.

The instrument used for the study was a set of questionnaire titled Influence of Continuous Assessment in Mathematics Assessment (ICAMA) containing a total of twenty (20) item statements which were administered on the teachers.

The research instrument was validated by five (5) experts in science education and measurement and evaluation. The experts’ suggestions led to a modification of some items in the questionnaire. A pilot testing was carried out on fifteen (15) mathematics teachers from public secondary schools at two different occasions with an interval of two (2) weeks. The score received were subjected to Cronbach High Coefficient reliability test. A reliability coefficient of 0.75 which was considered high enough to achieve the objective of the study was obtained.

RESULTS

The results of the data analysis are presented below in accordance with the research hypotheses.
Table 1: Relationship between the practice of C/A and problems encountered by teachers

<table>
<thead>
<tr>
<th>Sample</th>
<th>F0</th>
<th>f0</th>
<th>(f0-f)²/f0</th>
<th>X² cal</th>
<th>X² crit</th>
<th>Inference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>25</td>
<td>35</td>
<td>2.85</td>
<td>5.70</td>
<td>3.84</td>
<td>Significant</td>
</tr>
<tr>
<td>Disagree</td>
<td>45</td>
<td>35</td>
<td>2.85</td>
<td>5.70</td>
<td>3.84</td>
<td>Significant</td>
</tr>
<tr>
<td>Total</td>
<td>70</td>
<td>70</td>
<td>5.70</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(p >0.05; df = 1).

Table 2: Relationship between C/A and students’ academic performance in mathematics

<table>
<thead>
<tr>
<th>Sample</th>
<th>F0</th>
<th>f0</th>
<th>(f0-f)²/f0</th>
<th>X² cal</th>
<th>X² crit</th>
<th>Inference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>46</td>
<td>35</td>
<td>3.45</td>
<td>6.90</td>
<td>3.84</td>
<td>Significant</td>
</tr>
<tr>
<td>Disagree</td>
<td>24</td>
<td>35</td>
<td>3.45</td>
<td>6.90</td>
<td>3.84</td>
<td>Significant</td>
</tr>
<tr>
<td>Total</td>
<td>70</td>
<td>70</td>
<td>6.90</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(p >0.05; df = 1).

Table 3: Relationship between Teachers’ Qualification/experience and implementation of C/A

<table>
<thead>
<tr>
<th>Sample</th>
<th>F0</th>
<th>f0</th>
<th>(f0-f)²/f0</th>
<th>X² cal</th>
<th>X² crit</th>
<th>Inference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>22</td>
<td>35</td>
<td>4.82</td>
<td>9.64</td>
<td>3.84</td>
<td>Significant</td>
</tr>
<tr>
<td>Disagree</td>
<td>48</td>
<td>35</td>
<td>4.82</td>
<td>9.64</td>
<td>3.84</td>
<td>Significant</td>
</tr>
<tr>
<td>Total</td>
<td>70</td>
<td>70</td>
<td>9.64</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(p <0.05; df = 1).

Table 4: Relationship between the practice of C/A and students’ motivation in mathematics

<table>
<thead>
<tr>
<th>Sample</th>
<th>F0</th>
<th>f0</th>
<th>(f0-f)²/f0</th>
<th>X² cal</th>
<th>X² crit</th>
<th>Inference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree</td>
<td>47</td>
<td>35</td>
<td>4.11</td>
<td>8.22</td>
<td>3.84</td>
<td>Significant</td>
</tr>
<tr>
<td>Disagree</td>
<td>23</td>
<td>35</td>
<td>4.11</td>
<td>8.22</td>
<td>3.84</td>
<td>Significant</td>
</tr>
<tr>
<td>Total</td>
<td>70</td>
<td>70</td>
<td>8.22</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(p <0.05; df = 1).

Hypothesis One: There is no relationship between the practice of continuous assessment and the problems encountered by teachers.

Table 1 showed the $X^2$ critical value of 3.84 and a calculated $X^2$ value of 5.70 at 0.05 level of significance. Since the calculated $X^2$ value is greater than the critical $X^2$ value, this implies that the relationship between the variables is statistically significant.

Hypothesis Two: The practice of continuous assessment does not influence students’ academic performance in mathematics.

Table 2 showed the $X^2$ critical value of 3.84 and a calculated $X^2$ value of 6.90 at 0.05 level of significance. Since the calculated $X^2$ value is greater than the critical $X^2$ value, this implies that the relationship between the variables is statistically significant.

Hypothesis Three: Teachers’ qualification/experience does not influence the smooth implementation of continuous assessment in mathematics.

Table 3 showed the $X^2$ critical value of 3.84 and calculated $X^2$ value of 9.84 at 0.05 level of significance. Since the calculated $X^2$ value is greater than the critical $X^2$ value, this means that the relationship between the variables is statistically significant.

Hypothesis Four: There is no relationship between the practice of continuous assessment and students’ motivation in the learning of mathematics.

Table 4 showed the critical $X^2$ value of 3.84 and a calculated $X^2$ value of 8.22 at 0.05 level of significance. Since the calculated $X^2$ value is greater than the critical $X^2$ value, this means that the relationship between the variables is statistically significant.

Discussion of findings: The findings of this study revealed that the practice of continuous assessment generates problems for teachers in the teaching and learning of mathematics in secondary schools. This is in line with Lawal (2009) who identified the problems hindering the practice of continuous assessment in mathematics to include: inadequate supply of teaching aids, inadequate supply of mathematics teachers, lack of instrument for non-cognitive behavior, lack of technical knowledge on the part of teachers, heavy teaching loads, inadequate time for test and recording, lack of interest and dodging of test. According to him, the dodging of assessment by teachers and students and continuous testing syndrome which has replaced continuous assessment seem to be most disturbing.

This view is also supported by Eze (2000), Nzewi (2000), Kanno (2005), Ekonye (2007), Mkpa (2003) and Eme (2005). Who also opined that the practice and implementation of continuous assessment generates problems for teachers in the teaching of mathematics.

Similarly, from the findings of this study, it was established that the practice of continuous assessment has a significant relationship with students’ academic performance in mathematics. This is in line with Penny cuick (2000) who revealed that the practice of continuous assessment has significant effect on students’ academic performance in mathematics by improving their scores.

Furthermore, this study revealed that teachers’ qualification/ experience in the practice of continuous assessment have effect on its implementation. This in agreement with Egwu et al. (2009) who observed that poor experience/ qualification of mathematics teachers in Benue and Ondo States adversely affected the implementation of some aspects of the new mathematics curriculum in which continuous assessment is part. Complementing this finding, Ipaye (2007) pointed out that most teachers do not have the right qualification and training in educational assessment in primary and post primary schools a situation that greeted the effective implementation of continuous assessment in our schools.

Finally, the study also revealed that the practice of continuous assessment motivates students in the learning of mathematics. This is in line with previous studies of Gipps and Stobart (2003) who asserted that continuous assessment is democratic in nature in that it is used to encourage and motivate the students’ and make the assessment a positive experience. In support of this,
Adeyegbe (2004) pointed out that continuous assessment help students to learn better, motivate them to study, reveal specific areas of learning difficulties and provide feedback to the students and teachers.

**CONCLUSION**

This study showed the influence of continuous assessment in the teaching of mathematics in secondary schools with the view to improve students’ academic performances as well as motivates them to effectively learn mathematics.

In the light of this, the practice of continuous assessment in the teaching and learning of mathematics and other science related subjects will help to address the ugly trend of mass failure, lack of interest and lack of motivation on the part of students in mathematics and other science subjects in secondary schools.

**Recommendations:** Based on the findings, the following recommendations are made:

- The government should frequently organize workshops, seminars and conferences for serving teachers on the practice of continuous assessment in secondary schools.
- Institutions of higher learning should make continuous assessment a major course in their pre-service teachers training programme.
- The undergraduate Education Mathematics course should be widened to cover all aspects of continuous assessment.

**REFERENCES**


