
Students' Perception Of The Roles Of Formative Evaluation In Promoting Students Interest In Learning Mathematics In Senior Secondary Schools In Onitsha North Local Government Area

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Abstract

The study investigated students' perception of the roles of formative evaluation in promoting students interest in learning mathematics in senior secondary school in Onitsha North Local Government Area in Anambra State. Two research questions guided the study. Descriptive survey design was adopted for the study. A total of one thousand (1,000) students were randomly selected out of eight thousand, eight hundred and ten (8,810) S.S II students. The students were randomly selected from nine(9) public secondary schools out of 16 schools. Twenty (20) items were used for the study. Reliability coefficient of 0.87 of cronbach alpha was obtained. The data were collected using questionnaire. Mean scores were used to answer the research questions. Based on the findings, some recommendations were made. Among others is that teachers should ensure to assess their students every week and check their progress daily.

In Nigeria today, mathematics had been the basic or compulsory subject being taught in primary, secondary and university level. Mathematics is defined as the science that deals with the logic of shape, quantity and arrangement. Computer and calculators have revolutionized an information world deals with mathematics and this has revolutionized our definition of what mathematics is. Mathematics therefore, consists of the discovery of successive stages of the formal structures underlying the world and human activities in the world, with emphasis on those structures of broad applicability and those reflecting deeper aspects of the world. Stiggins (2005), noted that students use available information to decide if learning is worth the effort. If students believe learning is important, they need to put more effort but if they believe that learning is not important, they tend to give up. Assessment builds students "learning to learn skills

by emphasizing the process of teaching and learning and involving students as partners in that process". It also builds skills at peer-assessment and self-assessment and helps them develop a range of effective learning strategies.

However, formative assessment is self-reflective process that intends to promote students attainment. Formative assessment is more valuable for day to day teaching to meet the learners' needs. It also helps students to monitor their own progress as they get feedback from their peers and the teacher. Students also find opportunity to revise and refine their thinking by means of formative assessment. It is also called educative assessment and classroom assessment. Mcmanus (2006) define formative assessment as a method of continuous evaluation of students' academic needs and development within the classroom and precedes local benchmark assessment and state mandated summative assessment.

The Council of Chief State School Officers (CCSSO) developed a focus for formative assessment in October 2006, the council outlined major goals of formative assessment.

- Provide evidence that is used by teachers and students to inform instruction and learning during the teaching/ learning process.
- Collect evidence about how students learning is progressing during the course of instruction so that necessary instructional adjustments can be made to close the gap between students' current understanding and the desired goals.

Researchers believe in origin of idea of mastery learning whereby students are frequently given tests in order to know their outcome at the end of the session. Huhta (2010) is of the opinion that feedback is the central function of formative assessment. It typically involves a focus on the detailed content of what is being learnt, rather than simply a test score or other measurement of how far a student is falling short of the expected standard.

In mathematics education, it is really important for teachers to see how their students approach the problems and how much mathematical knowledge and at what level students use them to solve their problems. Gallagher & Worth (2008), believed that the purposes of formative assessment is to help teachers target instruction that meets specific learning goals, support student learning, check for progress and detect learning gains, identify strengths and weakness, check for misconceptions following instruction, differentiate instruction, evaluate the effectiveness of instructional methods or programs, and transform curriculums. To employ formative assessment in the classrooms, a teacher has to make sure that each student's participate in the learning process by expressing their ideas. There is a trustful environment in which students can provide each other with feedback; the teacher provides students with feedback and the instruction is modified according to student's needs. In mathematics classes, though raving activities such as model eliciting activities (MEAS) and generative activities provides good opportunities for covering these aspects of formative assessment. Marzano (2006) recall the findings from Black and Williams (1998) synthesis of more than 250 studies that formative assessments as opposed to summative

Students' Perception Of The Roles Of Formative Evaluation In Promoting Students Interest In Learning Mathematics In Senior Secondary Schools In Onitsha North Local Government Area

ones produce the more powerful effect on student learning. In his review of the researcher, Terrance (1988) reports that effect sizes for summative assessments are consistently lower than effect sizes for formative assessments. It is formative assessment that has a strong research base supporting its impact on learning.

Moreover, Watson (2006) showed that teachers experienced difficulty in effectively using formative assessment to guide further teaching. This study follow two highly experienced teachers self-identified as practicing many of the necessary aspects of quality form assessment. The study found that in both cases, the teachers lacked a strong connection between the use of formative assessment and then using the information from the assessment to gain an understanding of where students are and how to move them forward. The author suggested that a direction for improvement in using formative assessment which would be extending teachers' questioning and tasks so that they were more focused on the development of conceptual understanding as well as teaching students how to self-assess in terms of their mathematical understanding.

Teachers can improve the clarity of students learning targets by providing examples of both weak and stellar work (Sadler 1989, Chappuis 2005).

Bruce (2001) and Shaggins (2005) was of the opinion that students receive the most benefit from individual activities if they are encouraged to correct their work before turning it in. They can also learn to self-assess from models provided by their teachers (Black & William 1998, Sadler, 1989, and Chappuis 2005), and by practicing peer assessment. Bruce (2001) and Chappuis (2005) also note that student self-reflection and goal setting are key aspects of self-assessment.

Purpose of the Study

The purpose of this study is to determine students' perception of the formative evaluation roles of Mathematics Teachers and its effect on Students Interest in Learning Mathematics

Research Questions

The following research questions guided the study;

1. To what extent does mathematics teachers employ the elements of formative evaluation in their daily presentation of their lessons?
2. How do teachers improve formative evaluation for students' interest in learning mathematics?

Methodology

This study adopted descriptive survey design. Nine (9) public secondary schools were randomly selected out of sixteen (16) schools in Onitsha North Local Government Area.

A total of one thousand (1,000) students were randomly selected out of eight thousand, eight hundred and ten (8,810) S.S II students. A self-structured questionnaire was used to collect data to answer the research questions. A 13 item instrument was developed to elicit information on the degree or extent to which the students perceive the roles of formative evaluation of students' interest in learning of mathematics. The questionnaire consists of two parts. Part 'A' elicited for the respondent's personal data while section 'B' elicited for information extent to which the students perceive the roles of formative evaluation of students' interest in learning of mathematic. The instrument was based on a four point likert type scale of Very Great extent (VGE) points, Great extent (GE), low extent (LE) and Very low extent (LE). Validation of the instrument was done by two experts in mathematics and one expert in measurement and evaluation. There liability coefficient of 0.87 was obtained using Cronbach Alpha. Data for the study was collected through a well-structured questionnaire. The questionnaire were personally distributed and collected the same day by the researcher. The researcher took time and informed the respondent to tick the items as perceived appropriate to the question.

In order to ensure maximum returning instrument, the researcher waited on the respondent to fill in the questionnaire and return immediately. The data collected were analyzed using mean and standard deviation to answer the research questions. Mean scores of 2.50 and above were accepted and below 2.50 were rejected.

Research Question 1

To what extent does mathematics teachers employ the elements of formative evaluation in their daily presentation of their lessons?

Students' Perception Of The Roles Of Formative Evaluation In Promoting Students Interest In Learning Mathematics In Senior Secondary Schools In Onitsha North Local Government Area

Table 1: Response on the extent the mathematics teachers employ in elements of formative evaluation in their daily presentation of lessons.

S/N	Items	\bar{X}	SD	Decision
1	I give the students assignments regularly	3.50	1.03	Very Great Extent
2	I give the students Projects twice in a month	2.93	0.98	Great Extent
3	I always give them quiz in each topic I taught them	2.85	0.90	Great Extent
4	I allow them to debates in class	3.22	1.00	Great Extent
5	I encourage them on group discussion	3.00	0.99	Great Extent
6	I give time for questions and answers	3.20	1.00	Very Great Extent
7	Peer tutoring is been encouraged by the teacher	3.64	1.01	Very Great Extent
8	Group work is also encouraged	3.00	0.99	Great Extent
	Grand Mean	3.16		

Table 1 above revealed that the respondents on all the items 1-8 believed that mathematics teacher play active roles in their daily presentation of lesson with mean scores of 3.5, 2.9, 2.8, 3.2, 3.0, 3.2, 3.6 and 3.0.

This result shows that the extent the teachers employ in their daily presentation of their lesson was encouraging. The most encouraging response by the respondents has a mean score of 3.6 which states that peer tutoring is been encouraged by the teacher. That is why Black and William (2009) are of the opinion that practice in a classroom is formative to the extent that evidence about the student achievement is elicited, interpreted, and used by teachers to make decisions about the next steps in instruction that are likely to be better, or better founded, than the decisions they would have taken in the absence of the evidence that was elicited.

Research Question 2

What formative evaluation strategies do your teachers use that arouse students interest in Mathematics?

Table 2: Response on what formative evaluation strategies teachers' use that arouse student interest in learning mathematics.

S/N	Items	X	SD	Dec
9	Checking for progress	2.82	0.9	Agree
10	Identify strength and weakness.	3.00	0.8	Agree
11	Check for misconceptions following instruction.	3.22	1.0	Agree
12	Evaluate the effectiveness of instructional method.	3.15	1.0	Agree
13	Check how students participate in the learning process.	2.64	0.7	Agree
	Grand Mean	2.96		

Table 2 above reveals that the respondents agreed in items 9-13 that the teacher improves formative evaluation for student interest in learning mathematics with mean scores of 2.8, 3.0, 3.2, 3.1 and 2.6.

This results shows that the teachers uses different strategies to arouse the students but the most encouraging is that the teachers check for misconceptions following instruction given to the respondents which has a mean score of 3.2

Discussion of Findings

The study revealed in table 1 that the respondents on all the items 1-8 agreed that the extent the mathematics teachers employ in elements of formative evaluation in their daily presentation of lessons mathematics have mean scores of 3.5, 2.9, 2.8, 3.2, 3.0, 3.2, 3.6 and 3.0. Formative assessment is necessary for teacher to get feedback information to students in ways that enables the students to learn better or help the students to engage in a family or self-reflective.

This result shows that the extent the teachers employ in their daily presentation of their lesson was encouraging. The most encouraging response by the respondents has a mean score of 3.6 which states that peer tutoring is been encouraged by the teacher. Gallagher & Worth (2008), believed that the purposes of formative assessment is to help teachers target instruction that meets specific learning goals, support student learning, check for progress and detect learning gains, identify strengths and weakness, check for misconceptions following instruction, differentiate instruction, evaluate the effectiveness of instructional methods or programs, and transform curriculums.

Table 2 revealed in items 9-13 that the respondents all agreed that the teachers improve formative evaluation for student interest in learning mathematics with mean scores of 2.8, 3.0, 3.2, 3.1 and 2.6.

This results shows that the teachers uses different strategies to arouse the students but the most encouraging is that the teachers check for misconceptions following instruction given to the respondents which has a mean score of 3.2. It means that the teachers need to ask the students thoughtful and reflective questions rather than simple factual ones and then give students adequate time to respond. Oguniyi (1982) Cited in

Students' Perception Of The Roles Of Formative Evaluation In Promoting Students Interest In Learning Mathematics In Senior Secondary Schools In Onitsha North Local Government Area

Yara (2009) Found out that Students' positive attitude towards science could be enhance by the teacher related factors such as teachers enthusiasm resourcefulness & helpful behavior. Huhta (2010) is of the opinion that feedback is the central function of formative assessment. It typically involves a focus on the detailed content of what is being learnt, rather than simply a test score or other measurement of how far a student is falling short of the expected standard. Formative evaluations are important to teachers to see how they can check their students' progress, their problems and be able to solve their problems.

Conclusively, it shows that high quality formative assessment does have a powerful impact on students learning.

Recommendations

Based on the findings, the following recommendations were made.

1. Teachers own perception should be sought on the use of formative evaluation in subsequent research to ensure balanced and reliable result.
2. Teachers should be encouraged to sustain the use of formative evaluation in the teaching of Mathematics. Seminars should be conducted on the part of students at all levels of education on the importance of formative evaluation. This will help to reduce phobia and enhance academic performance in mathematics.
3. Formative assessment should be made necessary for teacher to get feedback information to students in ways that enables the students to learn better or help the students to engage in a family or self-reflective.
4. The teachers should be encouraged to use formative evaluation in identifying the gap or different between what students know and what they need to know, which includes collaboration between teacher and learner to identify learning goals and outcomes and criteria for achieving it.
5. Teachers should be mandated to involve students in decisions about their own learning and in self-assessment which will help the students to engage in reflection and build their metacognitive skills.

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