



Evaluation of Assessment Strategies Used by Basic School Teachers in Ghana: The Case of Assessment for Learning

**Osei-Asibey Eunice¹, Kusi Prince², Nimoh Vivian³
and Bosson-Amedenu Senyefia^{3*}**

¹*Department of Mathematics and I.C.T, Ada College of Education, Ada-Foah, Accra, Ghana.*

²*Department of Mathematics and I.C.T, Berekum College of Education, Berekum,
Bono Region, Ghana.*

³*Department of Mathematics and I.C.T, Holy Child College of Education, Takoradi, Ghana.*

Authors' contributions

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ABSTRACT

Ghana's new curriculum for the basic school emphasizes collecting and evaluating information about learners and using the information to make decisions to improve their learning. This study employed the survey research design aimed at evaluating the use of Assessment for learning strategy by basic school teachers in Ghana. The features, strategies and principles underpinning Assessment for learning strategy formed the basis of the construction of 16 item Likert scale with a reliability coefficient of 0.979. A sample size of 100 was computed at 95% confidence interval and randomly selected from the population. The study found significant difference between demographic variables (such as teaching division, teaching experience and gender) and the use of assessment for learning strategy. Female teachers demonstrated greater skills with respect to providing interactive assessment that gives immediate feedback and direction to students than their male teacher counterparts ($t(98) = 12.289, p = .000 < .05$). Class teachers demonstrated

*Corresponding author: E-mail: senyefia@yahoo.com;

greater skills with respect to providing assessment that is inclusive of all learners than their subject teacher counterparts ($t(98) = 14.001, p = .000 < .05$). Again, teachers with at least four years of experience in teaching demonstrated greater skills with respect to use of variety of feedback from students as a basis for deciding on groupings, instructional strategies and resources than their counterparts with less than four years of teaching experience ($t(98) = 17, p = .00 < .05$). The study recommended for continuous professional development (PD) session to be introduced for basic school teachers by Ghana Education service on effective use of formative assessment.

Keywords: Assessment for learning; formative; basic school; Ghana; curriculum; evaluation.

1. INTRODUCTION

Assessment for learning has a 'formative' purpose that shapes what lies ahead rather than simply to gauge and record past achievements. *Assessment for learning* has a purpose to improve and ensure learning. It is an assessment that is administered during the teaching process of learner formation. It ensures learning is parallel with the teaching. The teacher checks for understanding every now and then to ensure that before the end of lesson, chapter, unit or grading period, the learners understood the content taught. This form of assessment prevents wastage in teaching. It is mainly a formative kind of assessment. It usually involves pretest and posttest. Pretest is done to find out entry knowledge of learners or skills so teacher knows how to adjust instruction. The essence of posttest is to find out if the intended learning outcome has been attained after the teaching-learning process. If for some reason learners have some learning difficulties, the teacher will then apply intervention or a remediation [1].

Assessment for learning has a great capacity to transform the processes of teaching and learning in ways that enhance learning outcomes. It views both teachers and their learners as active participants in the teaching and learning processes. In this form of assessment strategy, learners develop to become autonomous, independent and active learners. When learners become active members of the teaching and learning processes as well as involved in classroom decision making, teaching no longer become the sole preserve of the teachers. Assessment for learning provides a key professional knowledge and skill teachers are required to have. Teachers having this skill and knowledge are able to exhibit some characteristics including: (a) planning for assessment (b) observing learning (c) analyzing and interpreting evidence of learning (d) giving feedback to learners and (e) support learners in

self-assessment. These skills need to be developed through initial and continuing professional development of teachers [2].

Assessment for learning occurs during the entire learning process. It is the means through which each learners understanding is made conspicuous. This enables the teacher decide his/her role to foster learners progress. Learners learn in individual and idiosyncratic ways. This mode of assessment is used as an investigative tool to find out information about the learners [3].

In the new curriculum for the basic education in Ghana, the developers expressed that teachers in most cases, cannot test all the objectives taught in a term or in a year (summative). Emphasis was laid on the need for formative assessment such as class exercises, take home assignments, and projects to be used and intensified to assess short term specific objectives. This in the long run will address the shortfalls in the use of summative assessment. This curriculum emphasizes the need for Ghanaian teachers to use assessment to promote learning and to identify the strengths and weaknesses of learners. This will enable teachers ascertain their learner's response to instruction [4].

1.1 Review of related Literature

Deluca et al. [5] studied to find if there were any significant differences between demographic variables of teachers (such as teaching division career stage, teachers experience and previous assessment) and their professional learning priorities. Significant differences were found for career stage, teaching division and assessment education.

Recent studies in Ghana [6,7] have shown significant differences between demographic variables of basic school teachers (such as teaching division, sex and years of teaching experience) and the use of formative and

summative assessment strategies. This raises the concern that professional teachers still need in-service professional training for effective use of the teaching strategies recommended in the curriculum.

Asamoah et al. [8] investigated gender difference in formative assessment knowledge of Senior High School teachers in the Upper West Region of Ghana. Their findings revealed a significant difference in the formative assessment knowledge of male and female senior high school teachers and that male senior high school teachers do better in their formative assessment knowledge than their female counterparts.

A study was conducted by Kenyon, [9] with an aim of examining the use of formative assessment by teachers to check for student understanding and to adjust instruction in the U.S. The results showed that teachers collected and used formative assessment to modify instruction and determine student understanding from a limited number of students. Again, the teachers lacked the knowledge, skills, and strategies to implement formative assessment to help all students meet learning goals.

Yina et al. [10] in their study of formative assessment found that it is imperative for teachers to intentionally assess to find the misconceptions of learners. The results showed that unless misconceptions are intentionally measured, they may not even be detected by general achievement tests.

Wilie [11] examined the breadth and quality of formative assessment implementation of 202 mathematics and science teachers who participated in a two-year, school-based professional development programme that focused on formative assessment. The results indicated that while teachers made significant improvements in some areas, certain aspects of formative assessment are less emphasized and there are some patterns around quality of implementation that suggest more targeted professional development is warranted.

In recent years in Ghana, many research have concentrated on how to improve the learning and academic achievement of learners. Bosson-Amedenu, [11] sought to find out the difficult concepts in the senior high school core mathematics curriculum in Ghana. The findings showed that there was a strong positive correlation between the concepts that male and

female students perceive as difficult. Circle theorem, Ratio and proportion were among the topics in that category. A study, [12] also sought to use the academic achievement of learners in mock exams to predict their performance in external West African Senior Secondary School Certificate Examination (WASSCE). The study found no significant difference between the WASSCE and Mock grades in Core Mathematics. Mock Core Mathematics was found to have a WASSCE predictive power of 92%. Another study [13], sought to determine the effect of using the West African Examination Council (WAEC) syllabus (which is examination-centered) rather than the Ghana Education Service (GES) syllabus (which has components of examinable and non-examinable components). The results showed that private school candidates treated with the WAEC syllabus outperformed those taught with the traditional GES syllabus. Also, regular candidates treated with the WAEC syllabus outperformed those taught with the traditional GES syllabus.

However, in all these past studies (including [14]), the academic achievement of learners was focused on the summative rather than the formative. There is the need for contemporary studies to be focused on the formative assessment; which in the long run influences the summative. It is therefore imperative to evaluate the *Assessment for learning* strategy used by the basic school teachers in Ghana.

1.2 Research Questions

- What is the mean score of basic school teachers on assessment for learning based on gender?
- What is the mean score of basic school teachers on assessment for learning based on teaching division?
- What is the mean score of basic school teachers on assessment for learning based on teaching experience?

1.3 Hypotheses

H₀₁: There is no statistically significant difference in the mean gender score of teachers with respect to the use of assessment for learning strategy in Ghana.

H₀₂: There is no statistically significant difference in mean responses of basic school teaching division (Class and subject teachers) with

respect to the use of assessment for learning strategy in Ghana.

H_{03} : There is no statistically significant difference in the mean responses of basic school teaching experience above 4 years and those below 4 years with respect to the use of assessment for learning teaching strategy in Ghana.

2. METHODS

The study used the survey approach to evaluate the use of Assessment for learning strategy by basic school teachers in Ghana. The features, strategies and principles underpinning Assessment for learning formed the basis of the construction of the 16 text items used in the questionnaire in this study. A sample size of 100 was computed at 95% confidence interval and randomly selected from the population of 132 basic school teachers. An Assessment for Learning Questionnaire (ALQ) was the instrument used to collect data from the respondents. The questionnaire consisted of a four point likert; Strongly agree (SA), Agree (A), Disagree (D) and Strongly Disagree. These Likert were weighted 4, 3, 2 and 1 respectively. The reliability of the items was assessed with Cronbach's Alpha. Normality assumption for the dependent variables was tested for each category of independent variable. Independent sample t-tests were used to determine whether or not differences existed for demographic groupings such as Teaching division and teaching experience. After developing these instruments, the content and face validity was done by experts in the Quality Assurance department of the Holy Child College of Education to determine the appropriateness of the instruments. Participants gave their consent for their responses to be used for the purpose of research. The duration for responding to the items was 2 hours. Since the respondents were guided to provide answers item by item, there were no missing data. The Questionnaire was composed of two parts. The first part consisted of open and closed ended questions. These questions required respondents to provide information on their sex, age, teaching division (class teacher or subject teacher), class size and years of teaching experience. The second part required the teachers to indicate their use of each feature of assessment for learning using a four-point scale. SPSS and Microsoft Excel were used for the data analysis. Yamane's Formula for Sample Calculation was used [15].

2.1 Sample Size Determination

There were 50 male and 50 female participants. A sample of 100 was computed from the population of 132 using the Yamane's Formula at 95% confidence interval.

2.2 Distribution Characteristics

Before the conduct of the analysis, assumptions that underlie the conduct of independent t-test were fulfilled. Prominent among these assumption were normality and homogeneity of variance. Specifically, the normality assumption was checked. The visual inspection of Q-Q plots and box plots showed that the assessment as learning items were approximately normally distributed across the category of independent variables such as teaching division, teaching experience and gender such that the skewness z- values (which were computed by dividing the skewness measure by its standard error) were within the range of ± 1.96 ; an indication of the data being approximately normally distributed [16].

3. RESULTS AND ANALYSIS

It can be inferred from Table 1 that the test is significant (for ASF15), and that the null hypothesis (H_0) is rejected. This is because considering $t(98) = 12.289$, $p = .000 < .05$ under equal variance assumed, it is evident that a significant difference exists in the means of the female and male teachers with respect to providing interactive assessment that provides immediate feedback and direction to students. The difference between male and female teachers in their use of assessment for learning strategy with respect to providing interactive assessment that provides immediate feedback and direction to students is displayed in the descriptive statistics which is presented in Table 2.

From the descriptive statistics that is shown in Table 2, it is clear female teachers had the highest mean of 3.68 with a standard deviation of .471 whereas male teachers had a mean of 2.48 with a standard deviation of .505. The mean difference is 1.200 explains that female teachers demonstrated greater skills with respect to providing interactive assessment that provides immediate feedback and direction to students than their male teacher counterparts.

It can be inferred from Table 3 that the test is significant (for ASF16), and that the null hypothesis (H_0) is rejected. This is because considering $t(98) = 14.001$, $p = .000 < .05$ under equal variance assumed, it is evident that a significant difference exists in the means of teaching division (class or subject teacher) with respect to providing assessment that is inclusive of all learners. The difference between class and subject teachers in their use of assessment for learning strategy with respect to providing assessment that is inclusive of all learners is displayed in the descriptive statistics which is presented in Table 4.

From the descriptive statistics that is shown in Table 4, it is clear class teachers had the highest mean of 3.59 with a standard deviation of .496 whereas subject teachers had a mean of 2.19 with a standard deviation of .397. The mean difference is 1.401 explains that class teachers demonstrated greater skills with respect to providing assessment that is inclusive of all learners than their subject teacher counterparts.

It can be inferred from Table 5 that the test is significant (for ASF8), and that the null hypothesis (H_0) is rejected. This is because considering $t(98) = -17.327$, $p = .000 < .05$ under equal variance assumed, it is evident that a significant difference exists in the means of category of teaching experience with respect to the expertise to use variety of feedback from students as a basis for deciding on groupings, instructional strategies and resources. The difference between teachers with at least four years of experience in teaching and their counterparts with less years of teaching experience in their use of assessment for learning strategy with respect to use variety of feedback from students as a basis for deciding on groupings, instructional strategies and resources is displayed in the descriptive statistics which is presented in Table 6.

From the descriptive statistics that is shown in Table 6, it is clear teachers with at least four years of experience in teaching had the highest mean of 3.91 with a standard deviation of .290 whereas their counterparts with less years of teaching experience had a mean of 2.51 with a standard deviation of .506. The absolute mean difference is 1.398 explains that teachers with at least four years of experience in teaching demonstrated greater skills with respect use variety of feedback from students as a basis for deciding on groupings, instructional strategies

and resources than their counterparts with less years of teaching experience.

It can be inferred from Table 7 that the test is significant (for ASF6), and that the null hypothesis (H_0) is rejected. This is because considering $t(98) = 11.802$, $p = .000 < .05$ under equal variance assumed, it is evident that a significant difference exists in the means of category of teaching division with respect to the expertise to assess to find out what confusions, preconceptions, or gaps students may have. The difference between class teachers and their subject teacher counterparts in their use of assessment for learning strategy with respect to assessing to find out what confusions, preconceptions, or gaps students may have is displayed in the descriptive statistics which is presented in Table 8.

From the descriptive statistics that is shown in Table 8, it is clear that class teachers had the highest mean of 3.32 with a standard deviation of .496 whereas subject teachers had a mean of 2.19 with a standard deviation of .471. The mean difference is 1.136 explains that class teachers demonstrated greater skills with respect to assessing to find out what confusions, preconceptions, or gaps students may have, than their subject teacher counterparts

4. DISCUSSION

Our study found significant differences in basic school teachers' demographic variables (i.e gender, teaching experience and teacher division) and the use of formative assessment (assessment for learning). Regarding gender, a significant difference was found; where female teachers showed greater expertise in the use of formative assessment with respect to providing interactive assessment that provides immediate feedback and direction to students than their male counterparts. With respect to teaching division, class teachers demonstrated better use of formative assessment by providing assessment that is inclusive of all learners than their subject teacher counterparts. As expected, basic school teachers with at least four years of teaching experience exhibited better use of formative assessment than their counterparts with less than four years of experience in teaching. To this end, the former demonstrated greater skills with respect use of variety of feedback from students as a basis for deciding on groupings, instructional strategies and resources than latter. These findings corroborate the studies [10,11,12].

Table 1. Independent t-test for differences in use of assessment for learning with respect to gender

		Levene's test for equality of variances		t-test for equality of means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean difference	Std. error difference	95% confidence interval of the difference	
								Lower		Upper
ASF15	Equal variances assumed	7.018	.009	12.289	98	.000	1.200	.098	1.006	1.394
	Equal variances not assumed			12.289	97.542	.000	1.200	.098	1.006	1.394

Table 2. Group Statistics of teacher's responses with respect to Gender

		Group statistics			
	Sex	N	Mean	Std. deviation	Std. error mean
ASF15	Female	50	3.68	.471	.067
	Male	50	2.48	.505	.071

Table 3. Independent t-test for differences in use of Assessment for learning with respect to teaching Division (Class or Subject Teacher)

		Levene's test for equality of variances		t-test for equality of means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean difference	Std. error difference	95% confidence interval of the difference	
								Lower		Upper
ASF16	Equal variances assumed	28.501	.000	14.001	98	.000	1.401	.100	1.202	1.599
	Equal variances not assumed			15.167	74.685	.000	1.401	.092	1.217	1.585

Table 4. Descriptive statistics showing a difference in the means of teacher's responses with respect to Teaching Division

		Group statistics			
	T Divison	N	Mean	Std. deviation	Std. error mean
ASF16	class teacher	68	3.59	.496	.060
	Subject teacher	32	2.19	.397	.070

Table 5. Independent t-test for differences in use of assessment for learning with respect to category of teaching experience

		Levene's test for equality of variances		t-test for equality of means							
		F	Sig.	t	df	Sig. (2-tailed)	Mean difference	Std. Error difference	95% confidence interval of the difference		
										Lower	Upper
ASF8	Equal variances assumed	89.008	.000	-17.327	98	.000	-1.398	.081	-1.558	-1.238	
	Equal variances not assumed			-16.465	66.949	.000	-1.398	.085	-1.567	-1.228	

Table 6. Group statistics of teacher's responses with respect to teaching experience

ASF8	Teaching exp	N	Mean	Std. deviation	Std. error mean
	below 4 years	45	2.51	.506	.075
	4 years and above	55	3.91	.290	.039

Table 7. Independent t-test for differences in use of assessment for learning with respect to teaching division

		Levene's test for equality of variances		t-test for equality of means							
		F	Sig.	t	df	Sig. (2-tailed)	Mean difference	Std. error difference	95% confidence interval of the difference		
										Lower	Upper
ASF6	Equal variances assumed	10.042	.002	11.802	98	.000	1.136	.096	.945	1.327	
	Equal variances not assumed			12.560	71.327	.000	1.136	.090	.956	1.316	

Table 8. Group statistics of teachers' responses with respect to teaching experience

ASF6	T Divison	N	Mean	Std. deviation	Std. error mean
	class teacher	68	3.32	.471	.057
	Subject teacher	32	2.19	.397	.070

5. CONCLUSION

This study concluded that teaching division, teaching experience and gender of basic school teachers could influence their use of assessment for learning strategy. The study showed that the teaching division of basic school teachers favoured class teachers to demonstrate greater skills with respect to assessing to find out what confusions, preconceptions, or gaps students may have than their subject teacher counterparts. Furthermore, teachers with at least four years of experience in teaching demonstrated greater skills with respect to use of variety of feedback from students as a basis for deciding on groupings, instructional strategies and resources than their counterparts with less than four years of teaching experience. Additionally, female teachers showed greater expertise in the use of formative assessment with respect to providing interactive assessment that gives immediate feedback and direction to students than their male counterparts.

6. RECOMMENDATIONS

It is recommended for continuous professional development (PD) session to be introduced for basic school teachers by Ghana Education service. This will provide support for teachers consistent with the implementation of the new curriculum. These interventions when put in place will increase teachers' knowledge and skills of use of formative assessment, and, in the long run enable them to meet learning goals of students.

7. SUGGESTIONS FOR FURTHER STUDY

Future studies could investigate how teachers use formative assessment and the impact on academic achievement of learners in high and low rated schools.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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