



The Effects of Formative Assessment on Pupils' Achievement in Civic Education in Lower Basic Education in Gombe, Gombe State, Nigeria

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Abstract. The paper investigated the effects of formative assessment on pupils' achievement in civic education in Lower Basic Education in Gombe. The study adopted a quasi-experimental research design specifically, the pre-test post-test non-equivalent control group design. The population of the study comprised all the 37 public primary schools in Gombe. Two schools were randomly selected which had 91 pupils with 46 in experimental group and 45 in the control group who were used with as intact classes. Public primary schools were used because they record more pupils' low achievement and share common characteristics in terms of provision of material and human resources. The instrument for data collection was a Civic Education Achievement Test (CEAT) which consisted of two sections A and B. Section A dealt on bio data of the pupils while section B contained 20 four-option multiple choice items in Civic Education contents. The CEAT was developed using table of specifications and was further subjected to scrutiny of three experts, one in Civic Education and two from Research, Measurement and Evaluation (RME) Unit in the Department of Educational Foundations, University of Jos. The experts were to judge the items' comprehensiveness, wording appropriateness, adequacy, precision and clarity. Their corrections and suggestions guided the production of final copy of the CEAT. The experimental group was taught civic education using formative assessment technique while the control group was taught using discussion method. A test-retest reliability coefficient of 0.82 was obtained using PPMC. Four research questions were raised and three hypotheses were formulated and tested at 0.05 level of significance. Mean, standard deviation and graph were used in answering the research

questions while t-test for independent samples was used in testing the hypotheses. The findings of the study revealed that pupils' pre-test civic education mean scores were low but the experimental group recorded higher mean scores after exposure to formative assessment. The t-test analysis indicated that there was a statistically significant difference between posttest means of the experimental and control groups. Gender did not affect the posttest civic education mean scores of the experimental group. The study recommended that the Gombe SUBEB should organize conferences, seminars and workshops for teachers and design curriculum on formative and other innovative assessment techniques.

Keywords: Civic Education, Formative Assessment, Lower Basic Education

1. Introduction

Education is a vital tool that cannot be separated from-human life. It is medium of transmitting knowledge from generation to generation. Education is the means through which the imparting of knowledge, skills, attitudes, values, habits and character are made possible to younger generations. Education takes place in the classroom through instruction whereby the teacher facilitates learning and assesses the level of learners' mastery of learning outcomes. Education plays an important role in the development of every society such that any country that does not have good education might lag behind other countries in technological advancement and development particularly, the attainment of the millennium development goals (MDG) of the 21st century. The relevance of education in the overall development

of individuals of any nation has led the Nigerian government to introduce different subjects at different levels of her educational systems, from primary, secondary to tertiary levels all geared towards realizing the goals of education of the country.

For instance, it has run the 7-5-4 system, the 6-3-3-4 system and currently the 9-3-4 system, the Universal Basic Education (UBE). The UBE was introduced in 1999 and divided the Nigerian education system into 9 years basic education of 3 years lower basic, 3 years middle basic and 3 years upper basic education to 3 years secondary and 4 years tertiary education. The basic reason for the reforms in education has been to provide the desired and suitable type of education that will meet the needs of the country. Among the subjects offered at the UBE level is Civics Education which aims at fostering patriotism, nationalism and character building. Civic education is similar to the education that was given to members of society during the pre-colonial era in form of learning by doing or apprenticeship to prepare individuals to take certain roles in society, be self-reliant and to become useful to themselves and the society (Omolewa, 2007). Civic education teaches moral values of the society to individuals such as their rights and obligations as citizens of a country. It constitutes aspects on political structure, ideal governance and social systems as it pertains to national life, universal values in democratic communities and the cooperation that is necessary for development and peaceful coexistence in global community.

Thus, the aim of teaching civic education is to inculcate in individuals the responsibility of participation in politics and societal living, both at local, state and national levels. To achieve this, it is necessary that the learners are given quality education that resembles what obtains in real life situation towards achieving the goals and objectives of education of the country. There is need to employ innovative assessment strategies that involves and engages the learners in creating their own learning. This is because it is through assessment that relevant information about level of mastery is obtained for proper decision making about the specific educational objectives and the learners. Assessment is a process of determining the behavior of learners after some instructional process. It is the process of acquiring information about the effectiveness of instructional materials, strategies as well as the level of mastery of learners. Assessment involves multiple techniques in the form of written, oral and performance/demonstration formats in groups or individually. Assessment does not cover only the learning outcomes at the end of specific period of

instruction but also the participation in learning by bringing classroom instruction and assessment together as learners are exposed to some contents (Orlando 2020). Assessment is designed to collect information about the quality of an individual's work or performance in terms of knowledge, skills, attitude or behaviour using a variety of procedures to collect the desired information (Johnson & Morris, 2009; Rabinowitz, 2010).

Assessment can be summative or formative in nature. Summative also called assessment of learning occurs after instruction and may be at end of a term, year, session or schooling programme, while formative assessment, called assessment for learning is carried out before and during instructional processes. It illustrates the partnership that exists between the instructional processes rather than just collecting data based on learners' test scores. Thus, formative assessment aims at improving the quality of instruction by modifying the learning. It tries to find out in a systematic manner, the over-all students' level of acquisition of knowledge, attitudes and skills after exposure to specific learning experiences (Kivuti, 2015). It is a process in which teachers and students provide feedback during instruction, informs teachers about whether students have learned and the indicators of learning thereby blending of instruction process in order to increase student achievement (Miller & Lavin, 2007; McManus, 2008; Wuest & Fisette, 2012).

Formative assessment is an on-going process that provides instant and specific feedback after each learning step to avoid unnecessary delay about learner's progress and correcting learners' errors for diagnostic and remedial purposes. It engages in frequent interactive assessments of learners' progress and understanding to identify their learning needs and to adjust teaching appropriately. Formative assessment can occur organically within a classroom setting in the form of discussion, observation, group work, or simple student-teacher interaction (Kline, 2013). One of the primary elements of formative assessment is posing and asking questions at each stage of learning to obtain information about students' depth of knowledge/mastery level (McMillan, 2014).

Formative assessment is a strategy that has been found to help improve students' achievement in many school subjects. For instance, Ugodulunwa and Okolo (2015) found that formative assessment helped to reduce secondary school students' mathematics test anxiety and to improve their achievement in mathematics. Alashwal (2020) also reported that formative assessment helped to build in elementary pupils a positive attitude towards learning. In addition, (Huisman, 2018; Jeneth 2019;

Dandekar 2020) found that formative assessment helped to improve learning/achievement in school subjects. Despite the relevance of formative assessment in improving learners' level of mastery of instruction, most teachers in Gombe are yet to employ its use in their day to day pedagogy. This may account for learners' poor achievement in Civic Education.

Among the factors that could affect students' achievement is gender. Gender refers to being male or female and roles and responsibilities of males and females that are created in the family, society, and culture UNESCO (2003). Gender also includes the expectations held about characteristics, aptitude, and likely behavior of males and females (masculinity and femininity). Gender roles and expectation are learned and can change over time and vary within and between culture and social differentiation such as political status or class, ethnicity, physical and mental disability and age among others. However, gender has been found to account for variation in students' achievement in school subjects though inconsistent (Moyosore, 2015; Alshwal, 2020).

Pupils' achievement in civic education in Gombe is poor. This is worrisome because it makes pupils not to be self-reliant and self-employed after leaving school. Civic education Basic Education Certificate Examination (BECE) conducted over the years in Gombe shows that performance of the pupils is poor. For instance, in the year 2012, 27.19% of 310 pupils that registered for the civic education examination passed with credits. In 2013, 64.72% out of 316 pupils that registered for the examination of civic education earned credits. In 2014, 42.04% out of 330 pupils that registered for the civic examination obtained credits. In 2015, 38.87% out of 318, pupils that registered for the examination passed with credits. In 2016, 50.47% out of 298 pupils that registered for the examination of civic education passed with credits. While in 2017, 47.39% out of 270 pupils that registered for the examination obtained credits.

Pupils' poor performance in civic education may deny pupils the opportunity to study civic education related subjects like social studies, sociology and citizenship education. Also, it will deprive and prevent pupils from reading courses that have a bearing with civic studies such as citizenship, peace and conflict studies and make them misfits in the society among others. There is need to improve students' performance in civic education by using innovative assessment such as formative assessment which assesses pupils' behaviour during instructional process. It will show pupils' level of engagement and involvement in activities such as cooperation, respect for each

other and interaction among others. It will equip lower basic pupils with the ideals in civic norms, moral values and societal and democratic values among others so as to make them patriotic citizens.

For instance, Moyosore (2015) found that formative assessment helped to improve performance in school subjects. There have been efforts by creation of school and the district branches of the National Commission for Civic Education (NCCE) in partnership to provide resource personnel to establish and manage civic education clubs in the school. The clubs engaged in different activities such as mock parliament, excursions to observe legislative proceedings, inter-school debate/quizzes with themes centered on current affairs, (Stephen, 2015). The researcher was not able to lay hands on studies conducted using formative assessment to improve pupils' academic achievement in lower basic education in Gombe. Hence, the present study sets to determine the effects of formative assessment on pupils' achievement in civic education in Lower Basic Education in Gombe.

2. Research Questions

The following research questions were formulated for the study:

- What is the pupils' achievement in civic education before their exposure to treatment?
- What is the posttest mean scores of the lower basic pupils in the experimental and control groups.
- What is the pre-test and post-test civic education mean scores of pupils in the experimental?
- What is the posttest civic education mean scores of pupils in the experimental group based on gender?

3. Hypotheses

The following hypotheses were formulated for the study and tested at 0.5 level of significance:

- There is no significant difference between the pre-test civic education mean scores of pupils in the experimental and control groups
- There is no significant difference between the posttest civic education mean scores of the pupils in experimental and control groups.
- There is no significant difference between the posttest civic education mean scores of the experimental group based on gender.

4. Methodology

The study adopted a quasi-experimental research design. Specifically, the pre-test post-test non-equivalent control group design whereby intact classes were used for the study without random assigning of subjects to the experimental and control groups. The pupils found in classes in the sampled schools were used without tempering with the school arrangements. The population of the study comprised of all primary civic education pupils in public schools in Gombe. There were 37 public primary schools in Gombe with population of 63,588 pupils comprising of 32,772 males and 30,816 females. Two schools were randomly selected from the 37 primary schools randomly assigned to the experimental and control groups. The two schools had 91 pupils with 46 in experimental group and 45 pupils in the control group.

The use of public primary schools within Gombe was because they record more pupils' low achievement and share similar common characteristics in terms of provision of material and human resources. The instrument used for data collection was a Civic Education Achievement Test (CEAT) for primary schools. The CEAT consisted of two sections A and B. Section A comprised

items on the bio data of the pupils, while section B contained 20 four-option multiple choice items in Civic Education. The CEAT was developed using table of specifications to ensure that appropriate items were allocated to each topic based on the time allotted to it and the behavioural objectives. It was further subjected to content validity by three experts, one in civic education and two from Research, Measurement and Evaluation (RME) Unit in the Department of Educational Foundations, University of Jos.

The experts were to judge the CEAT items in terms of comprehensiveness in items of content coverage, wordings, appropriateness, adequacy, precision and clarity of language. The experts' corrections and suggestions guided the production of final copy of the CEAT. It was administered to both the experimental and control groups after which only the experimental group was taught civic education using formative assessment technique while the control group was taught using discussion method.

The Pearson Product Moment Correlation (PPMC) was used to estimate the reliability of the CEAT. A reliability coefficient of 0.82 was obtained which showed that the instrument was reliable and adequate for the study.

5. Results

Table 1: The Lower Basic Pupils' Achievement in Civic Education before Exposure to Treatment.

Group	No. of Pupils	\bar{X}	SD	Mean Difference
Experimental	46	52.06	8.86	1.73
Control	45	50.33	9.38	

Table 1 shows the mean scores and standard deviation of the pupils in Civic Education Achievement Test (CEAT) before they were exposed to treatment. The results show that pupils in the experimental group had a mean score of 52.06 and a standard deviation of 8.86 while the control group had a mean score of 50.33 with standard deviation of 9.38. The mean difference between the experimental and control groups in civic education was 1.73 in favour of the experimental group. This indicates that before treatment, the civic education achievement of pupils' in the experimental and control groups was at the same level, implying that the two groups were of the same ability.

Table 2: The Posttest Civic Education Achievement of the Lower Basic Pupils

Group	No. of Pupils	\bar{X}	SD	Mean Difference
Experimental	46	77.17	10.68	17.61
Control	45	59.56	10.60	

Table 2 presents the mean and standard deviation of the pupils in civic education after treatment. The results show that pupils in the experimental group had a posttest mean score of 77.17 and a standard deviation of 10.68, while pupils in the control group had a posttest mean score of 59.56 and a standard deviation of 10.60. The pupils' posttests mean score difference in civic education was 17.61. The results reveal a posttest mean score difference of 17.61 in favor of experimental group. That is, pupils in experimental group had a mean score of 17.61 higher than that of the control group mean. This implies that exposure to formative assessment boosted the mean scores of the pupils in civic education. The result indicates that the exposure to formative assessment helped to improve the pupils' performance in civic education.

Table 3: The Pretest and Posttest Mean Score of Pupils in the Experimental Group

Test	No. of Pupils	\bar{X}	SD	Mean Difference
Pretest	46	52.06	8.86	25.11
Posttest	46	77.12	10.68	

Table 3 shows the mean and standard deviation of the pre-test and posttest of the pupils in the experimental group in civic education. The results reveal pre-test mean score of 52.06 with standard deviation of 8.86 and posttest a mean score of 77.17 with standard deviation of 10.68. The experimental group posttest mean score was 77.17 as against their pre-test mean score of 52.06. The experimental group recorded a mean gain score of 25.11. This means that the pupils’ perform higher in the posttest than in pre-test. It implies that exposure to formative assessment helped to improve the pupils achievement in civic education. This shows that formative assessment was more effective in teaching civic education than discussion method.

Table 4: The Civic Education Mean Scores of Pupils in the Experimental Group based on Gender.

Gender	No. of Pupils	\bar{X}	SD	Mean Difference
Male	19	76.94	9.01	0.56
Female	27	77.40	11.88	

Table 4 shows the mean and standard deviation of male and female of the posttest in the experimental group in civic education. The analysis shows that the males had a mean score of 76.94 with standard deviation of 9.01, while female have a mean score of 77.40 with standard deviation of 11.88. The mean score difference in civic education for males and females was 0.46. This shows the females had a mean score of 0.46 higher than that of the males. The mean difference based on gender seemed low which implies that gender did not affect the pupils’ achievement in civic education when taught with formative assessment.

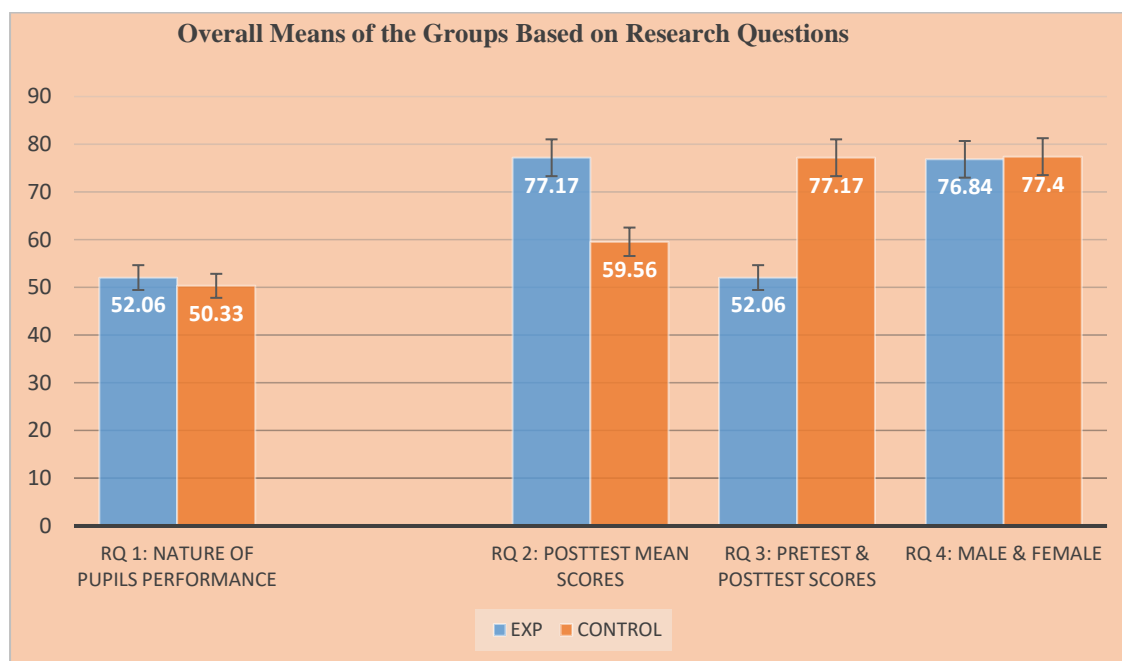


Figure 1: The Overall Civic Education Mean Scores of the Pupils’ Achievement.

Figure 1 illustrates the civic education mean scores of the pupils based on the research questions. The column chart segment one shows the pupils’ achievement for the experimental and control groups. Segment two presents the mean scores for research question two. Segment three illustrates the pupils’ pretest and posttest achievement while segment four illustrates the civic education achievement of male and female pupils.

Table 5: The t-test Analysis for Difference between the Pre-test Civic Education Mean Scores of the Experimental and Control Groups.

Groups	N	\bar{X}	SD	Df	t	P-Value
Experimental	46	52.07	8.86	89	0.91	0.367
Control	45	50.33	9.38			

P>0. 05

Table 5 presents the t-test analysis for difference between the pre-test civic education mean scores of the experimental and control groups. The Table shows $t = 0.91$, df of 89 and P value = 0.37. The results show that the difference between the pre-test CEAT mean scores of the two groups was not significant. The P value of 0.37 is greater than 0.05 level of significance. The null hypothesis is upheld because our data does not provide sufficient evidence for us to reject it. This indicates that there is no statistically significant difference between the pre-test civic education mean scores of pupils in the experimental and control groups. This implies that the groups are at the same ability level.

Table 6: The t-test Analysis for Difference between the Posttest Mean Scores of the Experimental and Control Groups.

Groups	N	\bar{X}	SD	Df	t	P-Value
Experimental	46	77.17	10.68	89	7.90*	0.000
Control	45	59.56	10.60			

$P < 0.05$

Table 6 shows $t = 7.90$, $df = 89$; P value of 0.00 indicates that the means of the two groups were significantly different. The P value of 0.00 is less than 0.05 level of significance. This indicates that there is a statistically significant difference between the civic education posttest mean scores of the experimental and control groups. The null hypothesis is rejected and we conclude that the posttest means of the two groups are statistically significantly different. It shows that exposure to formative assessment helped to improve the pupils' performance in civic education.

Table 7: The t-test Analysis for Difference between the Posttest Civic Education Mean Scores of the Experimental Group Based on Gender.

Groups	N	\bar{X}	SD	Df	t	P-Value
Male	19	76.84	9.01	44	-0.18 ^{NS}	0.86
Female	27	77.41	11.88			

$P < 0.05$

Table 7 shows that with $t = 0.18$, $df = 44$; P value of 0.86. This shows that there is no significant difference between the posttest mean scores of males and females in the experimental group. A P value of 0.86 is greater than 0.05 level of significance. The null hypothesis is retained and it is concluded that there is no significant difference between the post-test civic education mean scores of the experimental group based on gender. This shows that formative assessment helped in improving pupils' achievement in civic education irrespective of gender. This means that gender did not affect the pupils' achievement when they were exposed to civic education content using formative assessment.

6. Discussion

The findings on pupils' achievement in civic education in Gombe showed that pupils in both the experimental and control groups were at the same ability level before exposure to treatment. The low mean difference between the two groups implies that the control group can compete favorably with the experimental group. This indicates that there is no statistically significant difference between the pre-test civic education mean scores of pupils in the experimental and control groups. It implies that the groups were at the same ability level. The finding is consistent with the findings of Dandekar (2020) who observed no statistically significant

difference in the scores of students in short answer questions (SAQ).

The findings on difference between the posttest mean score of pupils in the experimental and control groups revealed that the experimental group had a higher mean gain score of 25.11 than the control group who had a mean gain score of 9.44. This implies that exposure to formative assessment boosted the mean scores of the experimental group pupils in civic education. The results of the t-test for independent samples indicated that the posttest means of the two groups were statistically significantly different. The result indicates that the exposure to formative assessment helped to improve the pupils' achievement in civic education. Formative assessment favored pupils in experimental group indicating that civic education pupils respond well to the self-paced assessments which allowed pupils to trial test their abilities, learn from their mistakes and build their capacities in a developmental process. This finding supports Huisman (2018) who found that use of formative assessment in the classroom positively impacted on students' learning. It is also in agreement with the findings of Jeneth (2019) that formative assessment had a positive impact on learners' achievement in secondary school mathematics instruction and the that five key formative assessment strategies improved learners' acquisition of problem solving skills after the intervention. The finding is

consistent with findings of Dandekar, (2020) who reported that students assessed with formative assessment scored significantly high than students in the control group. The foregoing indicated that formative assessment had a good effect on academic achievement of the students and that it helps in enhancement of learning. Exposure to formative assessment enabled learners to get involved and engaged in the learning processes and to develop their own learning. The finding is in line with the findings of Ugodulunwa and Okolo (2015) that formative assessment helped reduce anxiety level and improved mathematics performance of the students. It also agreed with the finding of Ozan and Kincal (2018) formative assessment helped learners achieve higher and develop positive attitudes toward the learning. The finding was also consistent with finding of Alashwal, (2020) formative assessment had significant effect on elementary school pupils by improving academic test scores.

The findings on pre and posttest of experimental group revealed a significant difference between the pretest and posttest civic education mean scores of pupils' in experimental group in favor of posttest. This means that pupil's performance was higher in posttest than in pre-test. It implies that exposure to formative assessment helped to improve the pupils achievement in civic education and that formative assessment was more effective method teaching civic education. The findings agree with Dandekar (2020) who discovered that formative assessment helped improved students test scores. The finding also supports Ashdale, (2020) who found a statistically significant difference between the mean scores of the two groups. The experimental recorded a statistically significant increase of about 60% in their achievement.

The findings on difference between the civic education mean scores of males and females was 0.46 in favour of the females. The mean difference based on gender seemed low which implies that gender did not affect the pupils' achievement in civic education when taught with formative assessment. The t-test analysis showed that no statistically significant difference existed between the mean scores of male and female pupils. The null hypothesis was retained and it is concluded that there is no significant difference between the post-test civic education mean scores of the experimental group based on gender. The findings imply that formative assessment helped in improving pupils' achievement in civic education irrespective of gender. It also showed that gender did not affect the pupils' achievement when they were exposed to civic education. This finding supports Olagunju, Asimiyu and Moyorose (2015) discovered no gender difference in the mathematics

achievement of students exposed to formative assessment. The finding is also consistent with Alashwal, (2020) who reported no significant difference between male and female pupils examination mean scores when exposed to Formative Classroom Assessment (FCA).

7. Conclusion

Formative assessment is an effective strategy for teaching civic education and adopting formative assessment and other innovative formative assessment techniques in teaching will enhance pupils/students' achievement in civic education and other school subjects. The difference in the posttest mean score of pupils in the experimental and control groups in favor of experimental group is an indication that formative assessment helped in diagnosing pupils' areas of difficulties and misconception such that remediation were provided to help improve pupils' mastery of the civic education contents.

8. Recommendations

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

- Civic education teachers should adopt formative assessment and other innovative assessment techniques to involve and engage pupils to have mastery of civic education contents.
- The Gombe SUBEB should organize conferences, seminars and workshops on formative and other innovative assessment techniques for civic education and subject teachers.
- The teachers' formative assessment for teaching civic education in primary schools.
- Establishing that formative assessment improved the civic education achievement of pupils at posttest, teachers should emphasize on regular diagnosis of pupils learning difficulties, provide feedback and remediation for pupils learning.
- The civic education teachers in Gombe should on their own part read to update their knowledge on innovative and current assessment practices.
- The State Universal Basic Education Board (SUBEB) in collaboration with Local Education Authorities should equip their teachers on innovative assessment practices.
- Curriculum designers and textbook developers should take into cognizance while designing tasks for learners that

learning in civic education should include a formative assessment.

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