



Effect of Academic Ability and Group Instruction Technique on Secondary School Students' Achievement in Civic Education in Anambra State, Nigeria

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Authors' contributions

Author OKO conceptualized the study, wrote the first draft of the manuscript and managed the literature review. Author GCU designed the study; performed the statistical analysis and interpretation. Both authors read and approved the final manuscript.

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ABSTRACT

Students' learning outcomes and performance are dependent on many factors from student-factors to teacher-factors, method of instruction, environmental and management factors. Given the falling standard in education in Nigeria, managing students' factors are becoming more crucial success factor in academic performance and achievement in subjects. Against this backdrop, this study investigated the effect of academic ability and group instruction technique on secondary school students' achievement in Civic education in Anambra State, Nigeria. In the method section, non-randomized control group, pre-test, post-test quasi experimental design was adopted as the design for the study. Six co-education schools in Anambra State were sampled using multi-stage sampling technique. From the area of study, 193 Senior Secondary 2 students as participants were drawn from one co-education school in each of the six education zones that make up 258 public secondary schools in the State. Analysis of Covariance (ANCOVA) was used as statistical tool for analyzing experimental data obtained from the field. Findings indicated that there were significant differences in Civic achievement test across high and low academic ability groups and experimental and control groups. The experimental group (taught with Group Instruction

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Technique) achieved better than the control group (taught with Lecture Method), while high ability students outperformed low ability students. The observed significant differences across groups indicate that student factors and teacher-factors have learning and achievement outcomes on Civic education in Nigeria. It is recommended that, stakeholders especially, secondary school principals and teachers evaluate students' academic challenges and proffer ways to improve achievement.

Keywords: Academic ability level; academic achievement; civic education; group instruction technique; intact class; learning and teaching techniques.

1. INTRODUCTION

The challenges of the Nigerian pluralist State have made Civic education an important subject in secondary education because it is hope to drive better citizenry in the country. This necessitated its inclusion in the secondary school curriculum [1]. Recently, students' dwindling performance on the subject [2] may have affected also good citizenship traits among the younger ones. This may be the cause for the rising social violence, crimes and nonchalant attitude to civic duties e.g. political indifference and participation by Nigerian youths. Thus, the search for the causes of students' poor achievement in Civic education has been embraced by stakeholders. Although, there are many factors which have been identified such as institutional corruption [3] which have affected quality education in general, methods of instruction and student variables are of greatest concern. For instance, Gess-Newsome, Taylor, Carlson, Gardner, Wilson and Stuhlsatz (2019) opined that teacher-student variables pose the greatest challenge in learning outcomes so also is method of delivery or instruction [4]. In these instances, we considered the effect of students' academic ability level and instruction technique (group instruction technique) on secondary school II (SS 2) students in Anambra State, Nigeria.

Academic ability is continuous and persistent grade level average which a student can attain over time e.g. achieving high or low scores in examinations [5]. Student's academic ability level is the status of a student in academic achievement; it represents student's natural competence as affect by environmental peculiarities of the student [6]. Bruning Schraw, Norby and Ronning (2014) contended that students' academic ability to understand events and phenomenon determine the success of educational outcome such as achievement. This implies that a student who has the ability to understand civic education concepts and phenomenon has better chances of achieving

more in civic education and it is hoped by stakeholders that this performance could be translated into good citizenship behaviour.

A student with consistent and persistent high score is viewed as a high academic ability student while a student with persistent poor or low scores is perceived as a low ability student. The researchers are of the opinion that differences in this ability may affect students' performance in Civic education for instance, Ogbuanya and Owodunni [7] provided empirical support for effectiveness of group instruction learning technique on students' achievement through effects of reflective inquiry instructional technique (a type of group instructional learning technique) on students' academic achievement and ability level in electronic work trade in Technical Colleges. Eze [8] opined that ability levels is among the factors that work for or against the effectiveness of any teaching techniques in Nigeria and thus recommended that in order to improve on students' academic performance, academic ability levels of majority of the students should determine the type of instruction technique to be adopted as it affect learning outcomes. On the impacts of academic ability level, Idowu and Hassan (2009) observed that the general academic ability of students as manifested in school's learning outcomes is deplorably low in Nigeria.

Dixson, Worrell, Olszewski-Kubilius and Subotnik [9] contended that it is not only academic ability which can affect learning outcomes; the impacts of psychosocial factors to academic performance are strong and also determine learning outcomes especially regarding performance and achievement. With Nigeria's shrinking budget for education, it is becoming impossible to expose students to practical teaching which can improve their abstract construction and greater understanding of different concepts in the subject. For instance, educationally motivated excursions and outdoor learning at civic places which is deemed essential in the learning of Civic education is greatly limited. This precarious

situation leaves stakeholders with the options of strengthening the techniques of teaching or adopting new ones to improve students' understanding, learning and performance. For this reason, the researchers are exploring the effects of group instruction technique in the improvement of students' understanding, learning and achievement in Civic education.

Noreen and Rana [10] opined that group instruction technique (GIT) is a purposeful teaching technique in which the teacher involves the students in the construction of knowledge through activity focused participation facilitated by the teacher. In this type of teaching, the teacher serves to moderate and guide students learning behaviour. According to Filgona, Sababa and Iyasco [11], the purpose of assisted or facilitated learning is to help the students to discover the relationship among concepts of their subjects through focused interaction with peers. The proximal effects of the peer interaction in learning behaviour help students shed off learning inhibitions and limitations which aids understanding [12]. This characteristic attribute of learning socialization was strongly advocated by Vygotsky's Socio-cultural theory of learning which underpins learning as being socially mediated and constructed. Group instruction technique can be inform of group project, brainstorming, collaborative learning, decision making, discovery and problem based learning and cooperative learning among others. For instance, Goble and Pianta [13] found that learning is more in a teacher-directed class which is rich in teacher-child interaction and peer-peer interaction.

The reduced students' exposure to practical learning has made the current researchers to think that group instruction technique may ideally solve the dwindling performance of students in the subject given the promise of Vygotsky's Socio-cultural theory of learning. Consequently, pertinent questions arise:

- a. What are the effects of students' academic ability level on academic achievement of students in Civic education in Anambra State?
- b. What are the effects of Group Instruction Technique (GIT) on academic achievement of students in Civic education in Anambra State?

Sotiriadou, Logan, Daly and Guest [14] contended that with true assessment difficulty,

students learning outcomes can only be ascertained through their academic performance which is usually affected by personal factors e.g. inherent academic ability and other learning factors such as method of instruction. On learning factors, without effective teaching mechanisms, learning objectives may not be actualized [15]. In Nigeria, there is evidence that the current methods of instruction are not yielding best benefits [16]. This may be ascertained by the poor performance in many subjects. Hence, the expectation is that boosting peer-to-peer assisted learning with integrated social learning that comes with such interaction will facilitate improved learning outcomes for students [17]. Although, no technique of teaching is without shortcomings; such teaching policy may also benefit both the high and low academic ability students in Nigeria [7]. On this, many studies [18] have empirical evidence on the efficacy of learning in group and thus advocated a shift from teacher centered teaching to learner centered learning.

On the effects of academic ability on students' academic achievement, Schmidt, et al. [19] established a relationship between children's motor ability (a form of inherent ability) and academic achievement. Schmidt's [19] findings emphasized that academic ability affect overall performance and thus there is need to tailor teaching approaches in consideration of majority of the students' academic ability. Therefore, using group instruction technique may likely benefit low academic ability students as well as high academic ability students.

To ascertain these effects, the three hypotheses were posed as follows:

- a. There is significant difference between mean achievement scores of high academic ability students and low academic ability students taught civic education with Group Instruction Technique (GIT).
- b. There is significant difference between the mean achievement scores of students taught civic education with Group Instruction Technique (GIT) and those taught with Conventional Method (CM).
- c. There is interaction effect of academic ability and instruction technique on students' academic achievement in Civic education.

2. METHODS

The design for this study is non-randomized control group, pre test, post-test quasi experimental design. Intact classes for the study were randomly assigned to experimental and control groups. The experimental group was taught with group instruction technique (GIT) while the control group was taught with conventional method group. Pre-test was administered to both groups (control and experimental); thereafter, experimental was taught civic education using group instruction technique while the control group was taught using conventional lecture method. By the end of the teachings, post-test was then administered on both control and experimental groups, after reshuffling of the items in the test to ascertain the achievement of students in civic education.

Multi stage sampling (purposive, cluster and random sampling) technique was used in sampling for 193 senior secondary two (SS II) students with experimental group comprising 92 (48 males, 44 females) while the control group was 101 (54 males, 47 females) from a population of the study consists of 8,656 SS II students in the 193 co-educational secondary schools in the 6 education zones in Anambra State.

Instrument for data collection was Civic Achievement Test (CAT) constructed and validated by the researcher. The researcher also prepared both the lesson plan and marking scheme for CAT. The preliminary part of the instrument contains provisions for obtaining the bio-data information on school code, class, age and gender for the students. It also contains instructions as regards to the test. Codes 01, 03, 05 are used by the researcher to identify the experimental group, while codes 02, 04, 06 are used for the control group. CAT was constructed by the researcher after extensive review of the literature and West Africa Senior Certificate Examination (WASCE) syllable and past questions and was assessed on a 40 multi choice objective test based on the topics in SS 2 civic education curriculum and scheme of work for the teaching. Each correct answer for CAT was given an assigned value ($2\frac{1}{2}$ points) with the total mark being 100%. Student's academic ability was measured using student's previous annual academic grade average. Students at average and above average ($\geq 50\%$) were regarded as high academic ability students whereas students below average ($< 50\%$) were

regarded as low academic ability students. Instruments for data collection were validated using experts in the field while reliability of the instruments were established using Kuder Richardson reliability measure which yielded KR-21 coefficients for CAT at $r = .76$. For data analysis, mean, standard deviation and Analysis of Covariance (ANCOVA) was used to test the significance of the differences among groups at 0.05 alpha levels. All analysis were performed using SPSS ver 21.00.

3. RESULTS

Data in Table 1 reveal that the post-test mean achievement scores of high academic ability students and low academic ability students taught civic education with GIT were 67.0 and 56.7 respectively. The result indicates that in the post-test GIT, high academic ability students performed better than low academic ability students with a mean difference of 10.3 since the post mean achievement scores of high academic ability students taught civic education with GIT is higher than low academic ability students taught civic education with GIT. Both high ability students and low ability students in experimental group (GIT group) outperformed their counterparts in control group (CM group). The finding indicates that the use of GIT affected achievement of civic education across high and low academic ability students with high academic ability students performing better than low academic ability students.

Data analysis in Table 2 reveal that the mean achievement scores of low ability students and high ability students taught civic education with Group Instruction Technique (GIT) were ascertained at $F(1, 193) = 122, p < .05$. The p-value ($p \leq .000$) is less than 0.05 and adjusted R^2 indicated that the observed difference contributed .565 (56.5%) understanding of the effects of academic ability level on civic achievement. Thus, hypothesis which stated that there is significant difference between mean achievement scores of high academic ability students and low academic ability students taught civic education with Group Instruction Technique (GIT) was confirmed. This implies that in the post test experimental, GIT affected high academic ability level students and low academic ability students' achievement in civic education since there is significant difference between the mean achievement scores of low ability students and high ability students taught civic education with Group Instruction Technique (GIT).

Table 1. Mean achievement scores of high and low ability students taught civic education with group instruction technique (GIT) and conventional method (CM)

Source of variance	N	Pre-test			N	Post-test			Mean difference	Remark
		CM	GIT	SD		CM	GIT	SD		
High ability	42	55.3	58.6	7.23	33	56.1	67.0	8.05	10.9	Effective
Low ability	59	43.5	43.2	6.93	59	44.1	56.7	8.52	12.6	Effective
Mean difference		11.8	15.4			12.0	10.3			Effective

Table 2. ANCOVA on mean achievement scores of low and high ability students taught civic education with GIT

Source	Type III sum of squares	Df	Mean square	F	Sig.	Partial eta squared
Corrected Model	11941.177 ^a	2	5970.589	125.892	.000	.570
Intercept	85638.026	1	85638.026	1805.705	.000	.905
Ability	5786.926	1	5786.926	122.019	.000	.391
Instruction Technique	6850.684	1	6850.684	144.449	.006	.432
Error	9011.009	190	47.426			
Total	594592.000	193				
Corrected Total	20952.187	192				

R Squared = .570 (Adjusted R Squared = .565)

Table 3. Mean achievement scores of students taught civic education with Group Instruction Technique (GIT) and those taught with Conventional Method (CM)

Source of variance	N	Pre-test mean	SD	Post-test mean	SD	Mean difference	Remark
Experimental Group	92	48.76	9.44	60.43	9.69	11.67	Effective
Control Group	101	48.49	9.13	48.68	7.55	0.19	Not Effective

Table 4. ANCOVA mean achievement scores of students taught civic education with Group Instruction Technique (GIT) and those taught with Conventional method (CM)

Source	Type I sum of squares	Df	Mean Square	F	Sig.
Corrected Model	6154.251 ^a	1	6154.251	79.434	.000
Intercept	573639.813	1	573639.813	7404.087	.000
Instruction Technique	6154.251	1	6154.251	79.434	.012
Error	14797.935	191	77.476		
Total	594592.000	193			
Corrected Total	20952.187	192			

R Squared = .494 (Adjusted R Squared = .490)

Table 5. Interaction effect of instruction technique and ability level on students' achievement scores in civic education

Source	Type III sum of squares	Df	Mean square	F	Sig.	Partial Eta squared
Corrected Model	8024.846 ^a	3	2674.949	32.738	.000	.342
Intercept	710741.478	1	710741.478	8698.654	.000	.979
InstructionTech	7987.261	1	7987.261	97.755	.000	.341
Ability	123.162	1	123.162	1.507	.221	.008
InstrTech * Ability	615.648	1	615.648	7.535	.007	.038
Error	15442.636	189	81.707			
Total	764120.000	193				
Corrected Total	23467.482	192				

R Squared = .342 (Adjusted R Squared = .332)

Data in Table 3 reveal that the pre-test mean achievement scores of students taught civic education with Group Instruction Technique (experimental group) is 48.76 while pre-test mean achievement scores of those taught with Conventional Method (control group) is 48.49. At the end of the experiment, the post-test mean achievement scores of students taught civic education with Group Instruction Technique (experimental group) increased to 60.43 whereas that of those taught with Conventional Method (CM) was 48.68. This indicates that the experimental group gained 11.67 post-test mean on achievement of civic education whereas the control group gained only 0.19 post-test mean on achievement of civic education. This shows that Group Instruction Technique (GIT) which was used for the experimental group accounted for better achievement than the Conventional Method which was used in the control group.

The ANCOVA analysis in Table 4 reveal that the mean achievement scores of students taught civic education with Group Instruction Technique (GIT) and those taught with Conventional method (CM) were ascertained at $F(1, 193) = 79.4, p < .05$. The p-value ($p < .012$) is less than 0.05 and adjusted R^2 indicated that the observed difference contributed 0.49 (49%) understanding of the effects of instruction technique on civic achievement. Thus, hypothesis II which stated that there is significant difference between the mean achievement scores of students taught civic education with Group Instruction Technique (GIT) and those taught with Conventional method (CM) was confirmed. This implies that instruction technique affected students' achievement in Civic education since there is a significant difference between the mean achievement scores of students taught civic education with Group Instruction Technique (GIT) and those taught with Conventional method (CM).

Data analysis in Table 5 reveal the interaction effect of instruction technique and academic ability level on students' achievement scores in civic education at $F(1, 193) = 7.5, p < .05$. The p-value ($p > .007$) is less than 0.05 and adjusted R^2 indicated that the observed interaction contributed 0.33 (33%) understanding of the combined effects of instruction technique and academic ability level on students' academic achievement in civic education. Thus, hypothesis III which stated that there is interaction effect of academic ability and instruction technique on students' academic achievement in Civic education was confirmed. This implies that the

interaction of instruction technique and academic ability level significantly affected students' civic achievement.

4. DISCUSSION

This study evaluated the effect of academic ability level and instruction technique on students' academic achievement in Civic education. The result was consistent with literature indicating that academic achievement of students is subject to multi-factor effects of mostly subjective, teacher-orientated and process factors such method of instruction and delivery. The study confirmed academic ability levels and method of instruction as determining factors of students' academic achievement in Civic education as well as establishing interaction effect between instruction techniques and academic ability level. Hence, hypotheses 1-3 were confirmed as students academic achievement patterns in education setting in Nigeria.

In the first hypothesis, academic ability level was found to be a significant subjective factor which affects learning outcomes; this may be as a result of individual differences and environmental factors which shape each student's academic ability. This was supported by Dizon-Ross [6] who found that children's academic ability varies across socio-demographic spectrum which calls for appropriate educational investments regarding the abilities. This was also supported by Shah's [5] findings which ascertained that subjective factors such as race, ideology, and environmental factors affected academic ability and performance. In Nigeria, Ogbuanya and Owodunni's (2015) study provided empirical evidence that students' academic ability level and method of subject delivery affect students' performance in electronic work trade in Technical Colleges. Schmidt et al [19] equally established a pattern of relationship between students' ability and performance in motor ability.

In hypothesis II, significant mean differences observed in GIT group and CM group are evidence that instruction technique as a process variable influenced learning outcomes in Civic education. Students in GIT (experimental group) outperformed their counterparts in CM (control group) indicative that group instruction technique was more effective in the teaching of Civic education than the conventional method. Dixon, Worrell, Olszewski-Kubilius and Subotnik [9] contended that the reason for this significant

difference may be because of the psycho-social contributions of the technique as supported by Vygotsky's Socio-cultural theory of learning. The finding is also similar to Jack's [4] empirical evidence linked learning cycle constructivist-based approach (a form of group instruction technique) to learning outcomes (performance) among students. This means that teaching civic education with Group Instruction Technique was better than teaching it with conventional method. Filgona, Sababa and Iyasco [11] also found this to be true using brainstorming learning strategy (a form of group instructional learning technique) which improved secondary school students' academic achievement in social studies. Parveen, Yousuf and Mustafa's [20] and Al-Shammari's [21] findings were equally consistent with the current evidence.

In the third hypotheses, interaction effect of academic ability levels and instruction technique was confirmed on students' civic achievement. Finding indicates that interaction effect between instruction technique and academic ability affected learning outcome among SS II students with different academic ability and taught with different instruction techniques. The interaction was supported also by the similarities of findings which Jack's [4] and Amedu's [22] have with the current study.

5. CONCLUSION

5.1 Implications of the Study

Factors which could affect learning outcomes are diverse; however, subjective factors such as level of academic ability, teacher factors and process factors such as instruction technique seem to have greater effects. The finding implied that not all technique of delivery may be suitable for all subjects as certain subjects may require unique methods to achieve the desired goals. Using techniques which can benefit majority of the students in learning may be advantageous.

5.2 Limitations of the Study

Teacher factors such as difference in using teaching technique were not accounted for and could possible influence students' performance; however, efforts was made to train research assistants to effectively moderate group instruction classes. There may be individual and environment factors which may have influenced the outcome of the experiment although efforts

were made to control many extraneous variables during the experimental study.

6. RECOMMENDATIONS

There is need for the Ministry of Education to carry out an extensive research on aspects of group instruction technique and how it may be adopted for problematic subjects teaching to improve learning potential of the students. There should be proper and fair distribution of students based on academic ability levels in order to balance the configuration of learning group in terms of learning competence. There is also the need to carry out a further study to establish the effects of other covariants which may affect learning outcomes under these circumstances such as the use of technology and method of assessment.

CONSENT

Informed and written consent has been collected from the participants and preserved by the authors.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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