

EFFECT OF INQUIRY METHOD ON THE ACHIEVEMENT OF SECONDARY SCHOOL STUDENTS IN ECONOMICS IN JEMA'A LOCAL GOVERNMENT AREA, KADUNA STATE

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Abstract

This study aimed at assessing the effects of Inquiry Methods on the academic achievement of Secondary Schools II Economics students in Jema'a Local Government Area, Kaduna State. The study raised five research questions and formulated five hypotheses that were tested at a 0.05 level of significance. The study adopted quasi experimental research design. A non-randomized pre-test, post-test non-equivalent control group design. In the experimental group, there were 15 males and 15 females with the total of 30 students while in the control group there were 15 males and 15 females with the total of 30 students. The number of the samples in both experimental and control groups were 60 each, the total for experimental and control group in both the urban center and rural area is 120 group located in Jema'a Local Government Area, Kaduna State, Nigeria. The population of the study involves the eleven (11) government co- education senior secondary schools in Jema'a Local Government Area of Kaduna State with the population of 1534 economics students. The Economics Achievement test EAT was the instrument used or data collection. The instrument EAT contains 25 multiple choice items. The data was analyzed using Statistical Package for Social Sciences (SPSS) version 26. Statistical decisions on the hypotheses were based on probability value (P-Value) of 0.05 level of significant. The result revealed that inquiry method improved students' achievement in economics, there was increases in the achievement mean score of urban and rural school students in Economics. The inquiry method improves both male and female performance in Economics and there was no significant interaction effect of treatment and location on achievement of students in Economics in senior Secondary Schools, Kaduna State. The study recommended that proper workshop and seminars should be conducted for teachers by the government and school management on how to use inquiry teaching method in teaching students in schools.

Keywords: Effects, Achievement, Economics, Inquiry Method, Secondary School Students.

Introduction

Education has been described as the master key to rapid social, economic and political development of any nation. It is therefore seen as a sure process of developing the citizenry cognitively, affectively and psychomotor. Education is further regarded as the process of teaching, training and learning which could be formal or informal with the aim of improving knowledge and to develop skill in the recipients. It is a type of life-long learning process which starts from the cradle and ends in the grave. This is no doubt why the Federal Republic of Nigeria (FRN, 2019) in the National Policy on Education stressed that education is an instrument “par excellence” for effecting national development in all ramifications. Therefore, any positive social change that occurred to humanity at one time or the other is likely to be attributed to the quality of education provided, be it formal or informal. It is no surprise why the public regarded education as a public service and therefore a right to everyone which the state should provide for all the citizenry. One of the cardinal objectives of education in Nigeria is to equip every citizen with such knowledge, skills, attitudes and values that will enable him/her derive maximum benefits from his/her membership of society. Indeed, quality education will enable the Nigerian child to have a fulfilling life and hence contribute towards national development.

The concept of teaching is synonymous to education. Teaching can be referred to a particular occupation or profession in which people may be engaged in. It denotes the various activities undertaken by a more experienced and more knowledgeable person in order to enable others learn. It is “teaching” in the later sense that concerned the researcher in this study. Like learning, teaching is a polymorphous activity. It takes many different forms; so much so that there seems no limit to its activities. Teaching is an exciting and rewarding activity but its demanding as its practitioners are required to clearly understand what should be done to bring about the most desirable learning in the pupil/students and be highly proficient in the skills necessary to carry out these tasks (Azeem, 2011). Bhargava (2009) argues that teaching process is multitasking, as he noted that teaching demands more genuity from teachers as subjects demand well prepared conscientious teachers of sound knowledge. It is in a bid for teachers to meet the demands of the profession that their training do not only aim at “imparting theoretical but also practical knowledge and skill in teaching different subjects to prospective practicing teachers” (Azeem 2011). This implies that teaching is the act of systematically presenting stimuli, or cues to the learners. Unless learning has taken place as a result of some effort, such effort cannot be referred to as teaching. However, teaching is more than the delivery of carefully prepared lesson. It is an activity designed by a person more experienced, more knowledgeable and more matured with respect to learning experience to further the education of another. A more global conception of teaching is that it is an attempt to help someone to acquire or change an attitude, knowledge, idea, or skill. Essentially, teaching consists of setting the stage so that someone can learn (FRN, 2019).

Teaching methods are an important aspect of teaching and learning process. They are referred to as a process, a course of action or a method of operation which varies according to circumstances. Some methods of teaching Economics include: lecture, discovery, discussion, project, problem-solving, co-operative, field-trip, inquiry, demonstration, role play and so on (Ogunsanya, 2018). To unveil the intellectual acumen inherent in the subject Economics, the need to teach in using the most effective method cannot be over-emphasized. It is now being recognized that there are better ways to learn than through the lecture method of teaching.

Both tertiary, secondary and primary have been shown to be relatively ineffective on the students' ability to master and retain important concepts, hence the need to explore other methods such as inquiry. This is because the Traditional lecture methods that dominate economics teaching have been criticized for promoting passive learning and insufficient critical thinking development. In contrast, the inquiry method rooted in student-centered, active learning principles engages students through questioning, investigation, and reasoning, which are crucial for grasping economic concepts and thinking like an economist (Shehu, Mukhtar, & Bello, 2024). In view of this the researcher highlights the efficacy of inquiry method of teaching in enhancing higher-order thinking and academic achievement. Gupta, Eneh, & Onunwor, (2019) meta-analysis of 36 studies revealed that inquiry method of teaching significantly improves critical thinking skills across educational levels, pointing to its broad applicability and impact in various disciplines including economics. Inquiry method of teaching in economics fosters autonomy and critical skills such as economic reasoning and argumentation, aligning well with goals of developing students' abilities to analyze economic problems. Inquiry methods which are student-centered and teacher-guided instructional approaches that engage students in investigating real world questions that they choose within a broad thematic framework. They complement lecture method by providing a vehicle extending and applying the learning of students in a way that connects with their interests within a broad thematic framework. Njoku (2019), Leaver (2010) opined that learning methods are primarily a pedagogical method developed during the discovery learning movement of the 1960s as response to traditional forms of instruction.

Inquiry method is a student-centered strategy of teaching whereby students interact actively and provide their viewpoints on any area of subject matter. It is done through investigations at the students' own rates and levels of ability which makes learning to take place. Inquiry method instruction complements traditional instruction by providing a vehicle extending and applying the learning of students in a way that connects with their interests within a broad thematic framework (Sunday, Opara, & Bardi 2021). Students should use inquiry process to develop curiosity from their observation by integrating what they already know with what they have learned. It is expected of the learners to go beyond the simple memorization of facts and regurgitation of information into the realm of creating new and deeper understanding through identification and subsequent application of solutions to a specific issue. Much like a woodworker continually acquires new tools to perform different tasks in his shop, educators such as Economics teachers should search for tools (methods) to add to their repertoire of educational practices (Agugum & Okoro 2020). One tool is not sufficient to do every task a woodworker must complete, so one teaching method should not be considered adequate for teaching all topics and meeting the learning requirements of all students. Inquiry teaching methods provides Economics teachers with other teaching techniques for developing life-long learners.

Inquiry method of teaching strategies are useful in delivering concepts that rely heavily on creativity and critical thinking Mergendoller and Boss (2015). The efficacy of both teaching methods discussed above in enhancing students' academic performance in Economics in secondary schools in Kaduna state is the focus of this study. Ololobou (2016) reported seriousness of deplorable performance of students in Economics and identified persistent use of the lecture mode of instruction as one of the major short-comings affecting the learning and higher achievement in Economics.

Economics educator seeks for solution to societal economic and social problems and hence the need to be taught with solution finding pedagogies like inquiry or methods but the present teachers at the secondary schools tend to adopt the lecture or conventional method (note taking) in teaching and learning of the subject Economics. Harlen (2010) opined that lecture method of instruction is no longer effective for the teaching of Economics. She therefore advised Economics teachers to move away from lecture teaching styles to creative (experimental) teaching styles which will make students move from lecture learning goals of subject assimilation to becoming critical and creative individuals. As Economics teacher must accept his responsibility by involving learners in classroom activities if they are to achieve learning and behavioural skills that will make them become living economists. Furthermore, the teacher must willingly accept that the application of some of the teaching strategies required the collaboration and cooperative efforts of some of his fellow teachers and other experts in order to bring about desirable learning outcomes in the learners (Adebumitim, 2022)

Gender is another factor in education and achievement. Gender is the amount of masculinity and femininity found in a person and obviously while there are mixtures of both in most human beings. Normally male has a preponderance of masculinity and the normal female has a preponderance of femininity. The concept "gender" has attracted the attention of many psychologists and researchers as a result of which a lot of literature exist on different aspect of education. The influence of gender on students' academic achievement has for a long time been a concern to many educational researchers. But surprisingly no consistent results have been obtained (Francis & Babatunde, 2018). Mathew, & Ponitz, (2019) observed that if male and female are exposed to activity-teaching strategy such as discovery outdoor and indoor strategies, they will perform equally. Empirical studies support that students taught with inquiry methods show improved academic achievement and motivation. For example, research from Imo State, Nigeria, demonstrated that guided inquiry strategies significantly enhanced economics students' academic performance compared to traditional methods, with gender differences favoring males in achievement outcomes, although both genders benefited from increased engagement (Okorie, & Ezech, 2016). Furthermore, international evidence from countries with strong education systems such as Finland and Australia shows that the integration of inquiry-based approaches leads to substantial gains in student academic performance up to 75% improvement reported in the results along with higher levels of student engagement and critical thinking (Yusuf, & Adigun, 2016). This shows that inquiry method enhances secondary school students' achievement in economics by fostering active engagement, critical inquiry, and deeper understanding.

The inquiry method's success in economics teaching lies in its ability to connect theoretical content to real-world economic phenomena, fostering intellectual curiosity and problem-solving skills needed in an increasingly complex economic environment (Minner, Levy, and Century 2018). Despite its proven benefits, challenges such as limited teacher training, resource constraints, and rigid curricula can hinder effective implementation. There is also an observed trend that inquiry method has been more extensively applied in disciplines, with comparatively limited but growing application in social sciences like economics. It is upon this that the researcher seeks to access the effect of inquiry method on the achievement of secondary school students in economics in Jema'a local government area, Kaduna state.

Statement of the Problem

The fundamental goal of Economics education is to equip learners with positive knowledge, attitudes, values and skills for the purpose of producing competent, human and effective citizenry who can contribute positively to the good of society by being efficient managers of the nation's scarce resource (Federal Republic of Nigeria, 2018). However, academic performance of Nigerian students in school subjects including Economics at the secondary school level has remained poor over the years. In Kaduna state, performance of students in WAEC observed to be deplorable and below expectation following the WAEC of 2020 and 2022. Statistics showed that out of a percentage of 100 students that sat for the examination within the year under review, an approximate percentage of 34.89% passed with credit, while a total of 65.11% had ordinary pass and failure. WAEC Chief Examiners' report of 2020-2022 revealed that students in the study area had inadequate knowledge of the subject Economics. The report showed that students lacked knowledge of plotting graph, answer questions that involve calculations, use of wrong terminology, failure to expatiate points. These identified problems could have arisen due to insufficient knowledge and teaching methods employed on the side of the teachers. However, considering the inherent benefits associated with inquiry methods of teaching a subject such as; Economics might be of eminent benefit in solving these identified problems. As noted by the Chief examiners report, most teachers are unable to cover all aspects of the Economics syllabus before presenting their wards for public exams. This could be associated with drawbacks attached with lecture method of teaching popularly used in most of the secondary schools today. Inquiry methods have the potential to activate the students' curiosity to learn develop their instinct in becoming creative and deep thinkers which is part of the quality of a good economist. This form of teaching if properly employed has the capacity to take care of students' individual differences irrespective of their gender and location. The above stated problems therefore, have informed the need to assess the effect of inquiry method on the achievement of secondary school students in economics in Jema'a Local Government Area, Kaduna State.

Aim and Objectives of the Study

The aim of this study is to assess the effect of inquiry method on the achievement of secondary school students in economics in Jema'a Local Government Area, Kaduna State. Specifically, the study intends to:

1. Determine the pretest and posttest achievement mean score of students in Economics in the experimental and control groups using inquiry method in teaching economics in secondary schools in Kaduna State.
2. Find out the mean difference score of the experimental group in pre-test and post-test in term of gender.

Research Questions

The following research questions were raised to guide the study:

1. What are the pretest and posttest achievement mean score of students in Economics in the experimental and control groups using inquiry method in teaching economics in secondary schools in Kaduna State?
2. What is the mean difference score of the experimental group in pre-test and post-test in term of gender?

Hypotheses

1. There is no significant difference in the post-test achievement mean score of students in economics in the experimental and control groups using inquiry method in teaching economics in secondary schools in Kaduna State.
2. There is no significant difference in the post-test achievement mean score of students in economics in the experimental group based on gender.

Methodology

The design of this study was a quasi-experimental pre-test-posttest non-equivalent control group design. The reason for the adoption of this design is hinged on the fact that intact classes will be assigned to experimental and control groups respectively. A sample of 60 Senior Secondary School SSII students was drawn from a population of the 305 Senior Secondary School Two (SSII) students in a co-educational public secondary school in Jema'a Local Government, Kaduna State that offered Economics. This consisted of 30 students for the control group and 30 students for the experimental group.

A purposive sampling technique was used to select two equivalent co-educational secondary schools that are distantly located from one another within the Jema'a Local Government, Kaduna State which are considered intact class settings. The instrument for data collection was developed by the Researcher and titled: the Economics Achievement Test (EAT) which was drawn from content areas of mathematical economics (measures of central tendency). The EAT is a 25-item multiple-choice test developed by the researcher. The reliability coefficient of the instrument using Kuder Richardson Formular (KR-20) yielded a reliability index of 0.72. KR-20 was used because the items vary in their strength of difficulty. Mean and standard deviation were used to answer the research questions while ANCOVA was used to test the hypothesis at 00.5 level of significance. The SPSS and electrical tool of 26.1 versions was used to run the analysis

Results

Analysis of Research Question One and Testing hypothesis One

Research Question One.

What are the pretest and posttest mean scores of students in Economics in the experimental and control groups. Table 3 below present the data analyzed to answer research one

Table 1

Pretest mean achievement scores of students in control and experimental classes

Group	Pre-test			Post-test		Mean Gain	$\bar{x}$ - difference
	N	Mean	SD	Mean	SD		
Pretest expt	30	49.52	8.351	61.77	10.461	12.25	10.77
Pretest Control	30	48.20	8.240	49.88	7.868	1.48	

Table 1 presents the data analysis to answer the research question one. In the experimental group the post-test achievement mean score was 61.77 and standard deviation of 10.46, higher than the pre-test mean score of 49.52 and standard deviation of 8.35 with a mean gain of 12.25 indicating that there was increase in the achievement of students after treatment. Also, for the

control group the mean score was 48.20 and a standard deviation of 8.24 at the pre-test. The post-test mean score of students rouse to 59.88 and a standard deviation of 11.87. The findings show that students in the experimental group had a higher achievement mean score (61.77) after treatment using than those in the control group (49.88) who were not given treatment with a mean difference of 10.77. This means that at the pre-test the students in both groups had a low achievement, but after the intervention using Inquiry method, the experimental group performed better than the control group. It implies that. Inquiry method does improve students' achievement in economics in senior Secondary Schools in Jema'a Local Government Area, Kaduna State.

Hypothesis One

There is no significant difference in the post-test achievement mean score of students in economics in the experimental and control groups using inquiry method in teaching economics in secondary schools in Kaduna state. Table 2 below present the data analyzed to test hypothesis on

Table 2:
ANCOVA Result on Post-test Achievement of Students in the Experimental and Control Group

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	5505.796 ^a	2	2752.898	36.437	.000	.384
Intercept	4409.031	1	4409.038	58.358	.000	.333
Covariate	1269.387	1	1269.387	16.802	.000	.126
Group	3848.722	1	3848.722	50.942	.000	.303
Error	8839.529	117	75.552			
Total	388317.000	120				
Corrected Total	14345.325	119				

a. R Squared =.384 (Adjusted R Squared = .373)

Source: Field survey, 2025

Table 2 presents the analysis results to test the hypothesis one. Analysis of Covariance (ANCOVA) which determined if a significant difference exists in the posttest achievement of students in Economics, exposed to inquiry method and those not exposed. Table 6 shows that $F(1,117) = 50.94$; $p < 0.05$, since the p-value of 0.000 is less than 0.05 level of significance, the null hypothesis was rejected, indicating that there was a significant effect of inquiry method on achievement of students in Economics. The result further reveals an adjusted R squared value of .373 which means that 37.3 percent of the variation in the dependent variable which is achievement in Economics is explained by variation in the treatment of inquiry method, while the remaining is due to other factors not included in this study. This implies that inquiry method can help increase students' achievement in Economics

Research Question Two

What is the mean difference score of the experimental group in pre-test and post-test in term of gender? Table 3 below presents the data analyzed to answer research two.

Table 3:
Achievement of Male and Female Students Exposed to Inquiry Method of Teaching

Group	Gender	N	Post-test Mean	SD	$\bar{x}$ - difference
Experiment	Male	30	64.13	10.996	3.22
	Female	30	60.91	10.254	

Source: Field survey, 2025

Table 3 presents the data analysis to answer the research question three. The data reveals the result of post-test achievement mean score of male and female students exposed to inquiry method of teaching. From the result, male students had a post-test mean score of 64.13 and a standard deviation of 10.99. Also, female students had a post-test mean score of 60.91 and a standard deviation of 10.25 with a mean difference of 3.22, indicating that there was increases in the achievement mean score of male and female students after treatment with male having a higher achievement in Economics than the female.

Hypothesis Two

There is no significant difference in the post-test achievement mean score of students in economics in the experimental group based on gender. Table 4 below present the data analysed to test hypothesis two

Table 4:
ANCOVA Result on Effect of Gender on Achievement of Students in the Experimental Group

Source	TypeIII Sum of Squares	Df	Mean Square	F	Sig	PartialEta Squared
Corrected	126.018a	2	63.009	.567	.570	.020
Model	5961.763	1	5961.763	53.678	.000	.485
Intercept	4.671	1	4.671	.042	.838	.001
Pre test	119.779	1	119.779	1.078	.303	0.19
Gender	6330.715	57	111.065			
Error	235364.000	60				
Total						

a. R Squared =.384 (Adjusted R Squared = .373)

Source: Field survey, 2025

Table 4 presents the analysis results to test the hypothesis three. An Analysis of Covariance (ANCOVA) was conducted to determine if there is a significant effect of gender on achievement of students taught Economics using inquiry method. The data shows that the main effect of gender yielded $F(1, 57) = 1.08$, $p > 0.05$, since the p-value of 0.303 is greater than 0.05 level of significance, the null hypothesis was retained, indicating that there was no significant effect of gender on the achievement of students taught Economics with inquiry method. The result further reveals an adjusted R squared value of .015 which means that 1.5 percent of the variation in the dependent variable which is achievement in Economics is explained by gender, while the remaining is due to treatment and other factors not included in this study. This implies that inquiry method can help improve achievement in Economics for both male and female students

Discussion

The study sought to determine the pretest and posttest achievement mean score of students in Economics in the experimental and control groups using inquiry method in teaching economics in secondary schools in Kaduna state. The study shows that the experimental group post-test achievement mean score was 61.77 and standard deviation of 10.46, which was higher than the pre-test mean score of 49.52 and standard deviation of 8.35 with a mean gain of 12.25 indicating that there was increase in the achievement of students after treatment. Also, for the control group the mean score was 48.20 and a standard 79 deviation of 8.24 at the pre-test. The post-test mean score of students rouse to 59.88 and a standard deviation of 11.87. Therefore, the findings show that students in the experimental group had a higher achievement mean score (61.77) after treatment using than those in the control group (49.88) who were not given treatment with a mean difference of 10.77 which means that at the pre-test the students in both groups had a low achievement, but after the intervention using Inquiry method, the experimental group performed better than the control group. It implies that Inquiry method does improve students' achievement in economics in senior Secondary Schools, Kaduna State. This result is evident in the hypothesis which shows that $F(1,117) = 50.94$; $p < 0.05$, since the p-value of 0.000 is less than 0.05 level of significance, implying that the null hypothesis was rejected, indicating that there was a significant effect of inquiry method on achievement of students in Economics. The result further reveals an adjusted R squared value of .373 which means that 37.3 percent of the variation in the dependent variable which is achievement in Economics is explained by variation in the treatment of inquiry method, while the remaining is due to other factors not included in this study. This implies that inquiry method can help increase students' achievement in Economics. This is in agreement with Larmer, Mergendoller and Boss (2015) they observed that students actively participate in the learning process when they are engaged in inquiry-based activities because it encourages students to explore their interests and ask questions. It also stimulates curiosity and allows for creative thinking which leads to better retention and understanding of the concept. The inquiry teaching is educative and experimental and produces a lot of fun and joy as students learn by doing. Banchi and Bell (2008) asserted that Inquiry-based learning method encourages autonomy and independence of students to take ownership of their learning. They are encouraged to explore topics of interest and pursue their own lines of inquiry, which can lead to a deeper understanding of economics.

In the mean score difference of the experimental group in pre-test and post-test in term of gender, the findings revealed that the male students had a post-test mean score of 64.13 and

a standard deviation of 10.99, while the female students had a post-test mean score of 60.91 and a standard deviation of 10.25 with a mean difference of 3.22, indicating that there was increases in the achievement mean score of male and female students after treatment with male having a higher achievement in Economics than the female. The hypothesis shows that the main effect of gender yielded $F(1, 57) = 1.08, p > 0.05$, since the p value of 0.303 is greater than 0.05 level of significance, the null hypothesis was retained, indicating that there was no significant effect of gender on the achievement of students taught Economics with inquiry method. The result further reveals an adjusted R squared value of .015 which means that 1.5 percent of the variation in the dependent variable which is 81 achievements in Economics is explained by gender, while the remaining is due to treatment and other factors not included in this study. This implies that inquiry method can help improve achievement in Economics for both male and female students. This is in agreement with Minner, Levy, and Century (2018) who stressed that inquiry-based teaching can lead to several positive outcomes for students because it leads to critical thinking and problem solving skills, enhanced motivation and engagement, deeper understanding and retention of content without minding the gender of the learner.

Conclusion

The aim of this study was to assess the effects of inquiry methods on Students' Performance of SS 2 Economics students in senior Secondary Schools, Jema'a Local Government in Kaduna State. The inquiry-based method is a teaching approach that encourages students to actively engage with material through questioning, exploring, and investigating. It fosters critical thinking skills by prompting students to ask meaningful questions, gather evidence, analyze information, and draw conclusions. The study generally revealed that inquiry method improved students' achievement in economics, there was increases in the achievement mean score of urban and rural school students in Economics. The inquiry method improves both male and female performance in Economics and there was no significant interaction effect of treatment and location on achievement of students in Economics in senior Secondary Schools, Kaduna State.

Recommendations

Based on the findings, discussion and conclusion, the following recommendations were made:

1. Proper workshop and seminars should be conducted for teachers on how to use inquiry teaching method in teaching students in schools
2. The school management should encourage this method in their schools due to its importance
3. Government should provide more facilities in schools to enable them use various teaching method for teaching and learning in secondary schools.

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