

**EXPERIMENTAL INVESTIGATION OF GUIDED-DISCOVERY TEACHING
METHOD AND INSTRUCTIONAL MATERIALS UTILISATION ON
ECONOMICS PERFORMANCE OF SECONDARY SCHOOL STUDENTS IN
OYO STATE, NIGERIA**

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Abstract

This study examined an experimental investigation of guided-discovery teaching method and instructional materials utilization on Economics performance of secondary school students in Oyo State, Nigeria. Pretest-posttest, control group quasi-experimental design with a 2x2 factorial matrix was used in the study. Multi-stage sampling technique was used in sampling 78 participants from 4 local government areas in the state. The respondents were measured with Economics Performance Test of 21 items with 0.89 internal consistency obtained from test-retest method of reliability. Data obtained was analyzed using t-test statistical analysis. Two (2) research questions and two null hypotheses were formulated and tested at 0.05 level of significance. The result of the investigations revealed that there was significant difference in the performance of students taught with guided-discovery teaching method and those taught with normal conventional methods in the control group ($t(76) = 43.67$; $p < 0.05$) and there was significant difference in the Economics performance of secondary school students taught with instructional materials and those without instructional materials ($t(76) = 33.41$; $p < 0.05$). In view of these findings, the study recommended that teachers and other stakeholders should be trained on how to improve on the instructional materials utilisation and guided-discovery teaching

method and that curriculum planner should include effective teaching strategies/methods into teacher training institutions/programmes. This will help in sharpening the skills of teachers towards instructional content delivery so as to enhance the students' academic performance.

Keywords: *Guided-Discovery Teaching Method, Economics Performance, Instructional Materials*

Introduction

The processing of impacting the knowledge of economics to students will provide them(students) with the opportunity opportunities to make rational economic decisions and live a meaningful life in a dynamic society. The federal Republic of Nigeria through the federal ministry of Education (2013) stipulated that that the objectives of teaching Economics in secondary schools in Nigeria is to: inculcate in the students the basic principles of economics concepts that is necessary for living a meaningful life; to draw the consciousness of students in management of scarce resources; to have utmost respect for the dignity of labour and increase students gratitude of economic, cultural and social values in a society; and to install in students the knowledge and areas of application and practicality of economics in their everyday life and also in the total development of Nigeria as a whole. Now, it is a worry that every society is faced with the fundamental economic problem of what to produce (Adu, 2012).

Over the years, Economics as a subjects has been widely accepted by different countries all over the world. This has increased the enrolment of students to pick economics in both WAEC and NECO. Despite the relevance that Economics posit in the area of commerce and industry, the process that is involved in teaching the subjects matter is duly characterized by so many shortfalls in Nigeria. It has been evidences that teachers are not equipped with adequate instructional materials to enhance the teaching of the subject matter, which by a large extent has affected the process of teaching and learning of the subject matter. In such cases, teachers are left with improvising innovative teaching methods that will enhance the teaching of Economics at all level of education. (Adu & Galloway, 2015; Joe, 2004).

Teaching and learning process is a two-way traffic where the teacher sends out the message while the students acknowledges through feedback, but this give and take processes could only be effective when the teaching method applied is appropriate. Teaching Methods refers to the process of transmitting facts, skills, information and knowledge by the teacher, so as to engage students in meaningful activities for learning and to achieve the objective of the lesson (Adu, 2012; Adu & Galloway, 2015). According to Madugu (2005) teaching methods consist of sequence of activities involved in instructing learners. Also, Ajoma (2009) expressed teaching method as a

professional technique in which teachers embrace regularly in giving out instruction during classroom discussions with student to enable them impact useful content, experiences and skills to the learner. Guided-discovery teaching method according to Mayer (2003), he posited that students should form an integral part of the learning presence. Because teaching involves both the teachers and the learners, learners should be allowed to actively participate in the teaching learning processes.. Nelson (2004) pointed out that guided-discovery is a method of teaching, where the teacher acts as a motivator to help students overcome difficulties, by providing illustrative materials for students to study on their own, and provide reasonable answers to questions asked.

Guided-discovery is a teaching method, that enable learners create their own learning experience, with the guidance of their teacher. This method has recently been emphasized in modern teaching (Adu & Galloway, 2015). It has been identified as providing meaningful learning and thus teachers are encouraged to use them. Guided-discovery method involves an unstructured exploration in some problem-solving experiences in which students can draw general conclusions from data gathered through measuring, classifying, inferring, predicting, communicating, analyzing, clarifying, describing and formulating relevant questions (Moses, 2003).

Instructional materials are instruments which are used to enhance teaching and learning. According to Abdullahi (1982), instructional materials are equipment which are constructed or purchased that will aid the teaching and learning, which is aimed at giving the students a practical feeling of the concept that is been taught for easy understanding. Isola (2010) defined instructional materials as the devices that will help the teacher in giving the students a clearer picture of the lesson been taught. Instructional materials could also be seen in form of a concrete or physical objects that provides audio and visual enhancing during teaching (Agina-Obu, 2005; Owoyele & Muraina, 2016). The categories of instructional materials such as audio refer to those electronic devices that appeases to the sense of hearing only, like tape recorder, radio, microphones and speakers etc. The visual instructional materials is more concerned with visual displays which is projected for students to see, these devices that appeal to the sense of sight and these includes chart, slide, film strip etc. An audio-visual instructional material however have the characteristics of both the audio and visual, and by implication they appease both the ears and eyes, meaning it could be seen and be heard and these includes, motion picture, televisions and a computer set.

The influence of instructional materials in promoting students' academic performance and teaching of Economics is indisputable. The the process and techniques that should be employed when teaching Economics in secondary schools needs to be handled properly. As a result of the immense contributions of Economics to the national economic development, the need to be taught thoroughly in order to meet the educational and economic development cannot be overemphasis (Esiobu, 2005; Oshadumi, 2003). Researchers has conducted various research on the use of relevant instructional materials to enhance students' academic achievement. In the work of Isola

(2010) who correlated the use of instructional materials with students' academic achievement in ten different subjects in Kwara State, with Economics included. In a similar vein, Odukwe (1983) conducted a research in Ilorin, Kwara State and found that the use of instructional materials has a positive relationship when compared with students' achievements among these 10 subjects.

The poor academic performance of students in Economics in Oyo State was clearly shown in the results of the 2010-2017 National Examination Council (NECO) and West Africa Examination Council (WAEC) respectively with a pass rate between 12.08% to 23.28% and 10.67% to 21.32% respectively. This has called for teaching methods and strategies to be improved upon to bring about increase in students' academic achievement. However teachers are supposed to understand the complexity of a topic and know which appropriate teaching strategy to employ at that point in time (Adu & Galloway, 2015). Following the interactions between the researcher and Economics teachers and students in secondary schools, some teachers attributed the problem of poor performance to teaching methods used in teaching Economics. According to them, the lecture, discussion, scaffolding and cooperative teaching methods has been used, but performance in senior certificate examination in Economics continues to be poor.

Some complained that there is little or no time to complete the Economics syllabus in the schools and as such some topics are left untouched or carried over to the next term or even the next session. On the other hand, some students complained that some of their teachers are coppers and as such do not keep to their teaching periods, while other students complained that the subject was too difficult to assimilate as it required a lot of calculation. From all the interactions so far stated, it is glaring that student poor performance in Economics is the problem that prompted this study, and as such will be addressed using empirical evidences. In spite of the tremendous efforts been put in by researchers and other educational expert in finding a lasting solution to the problems of poor academic performance in Economics, few studies have concentrated on the effects of guided-discovery teaching method and instructional materials utilization.

Objectives of the Study

The focus objective of this study is to observe an experimental investigation of guided-discovery teaching method and instructional materials utilization on the performance of secondary school students in Economics in Oyo State, Nigeria. Specifically the objectives include to:

1. find out the difference in the secondary school students' performance in Economics, who are exposed to guided-discovery teaching method and those exposed to conventional lecture method.

- investigate the variations in secondary school students performance in Economics, who are taught with instructional materials and those without instructional materials

Hypotheses

This study developed and tested the following null hypotheses at 0.05 level of significance.

HO₁: There is no significant difference between the Economics performance of secondary school students exposed to guided-discovery teaching method and those exposed to conventional lecture method

HO₂: There is no significant difference in the mean achievement scores of students taught with instructional materials and those without instructional materials

Theoretical Support

The theory used in this study is the constructivist learning theory. It finds its fundamentals to the works and viewpoints of Jerome Bruner, Lev. S. Vygotsky, amidst others. Constructivist learning methodology is of the view that knowledge is constructed from a previous knowledge. Children are not a tabula rasa and knowledge cannot be communicated without the child creating sense of it according to his or her existing ideas. Thus, children learn better by when they are individually allowed to construct a personal thoughtful understanding of knowledge based on experiencing things and reflecting on those experiences. Bruner (1915) stressed on the role in which teachers play during classroom instructions in terms of language and instructional techniques in teaching. He understood that at different stages different strategies were employed by the learner in problem solving and that student employ these strategies differently, this vary from person to person and that social interaction lay a foundation for good learning. Bruner theory of learning is related to the study in a way that the tenets focuses on encouraging student knowing, discovering by oneself and ability to work out problems by discovering which this study tends to implement. It emphasized that learning should be cooperative (guided discovery) and that teachers strategies should be modified to be in conformity with the learning pace of the students' which also gives room for collaboration among students.

Methodology

The study adopted the pretest-posttest, control group quasi-experimental design with a 2X2 factorial matrix. In essence, the row consists of guided-discovery teaching method and the control. The row was crossed with instructional materials utilization varied at two levels (with and without).

The instruments for data collection was Economics performance test (EPT), the instruments constituted a twenty one (21) multiple choice items with four options to pick the correct one. One hour was allocated for students to answer the questions. Kuder – Richardson (KR20) was employed to establish the reliability coefficient and

an overall coefficient of .89 was ascertain. Factorial analysis was used to analyze and ascertain the difficulty index and discriminatory power of the test. The analysis was done using students with higher achievers and lower achievers in Economics. The difficulty and discriminating indices of each of the test items was computed and .55 difficulty and .82 discrimination index were obtained.

However, face, content and construct validation was done to make sure the instruments is valid to measures what it supposed to measur. During the validation, the items was reduced from (50) to thirty three (33) after the instruments was validated by three (3) Economics teachers in secondary schools for scrutiny; furthermore, after conducting item analysis, the items was further reduced from thirty three (33) to twenty one (21). The items that was deem fit for carrying out the investigation on the achievement test was administered to thirty students. However, the EPT was constructed on lower and higher level of cognitive domain (i.e Recall, Understanding and Application, Analysis, Synthesis and Evaluation).

The population for the study comprised 46,386 public secondary school students in 33 Local Government Areas (LGAs) of Oyo State, Nigeria (TESCOM, 2017). Multi-stage sampling technique was used. Initially a simple random sampling technique was used to select 4 LGAs. Secondly, 2 public secondary schools from each sampled LGAs. Ten secondary school adolescents were sampled in each school through balloting and this cut across different gender. On the whole, 80 secondary school adolescents were drawn for the study. However, the whole samples was grouped into two, one group formed guided-discovery teaching method class while others was used as the control group.

Inclusion and Exclusion Criteria

The criteria that was established for selection of participants includes the following:

- i. Students used for the study were SS 2 student
- ii. The consent of Students' parents
- iii. Consent of school authority before using Students
- iv. Willingness of student to participate in the control group
- vi. Students with consistent record of low Economics performance

The study was conducted in four different phases. The first stage was preliminary activities stages, were preliminary meeting and familiarization of instruments by participants of the experimental process. During the pre-test, Economics performance test was administered to the students'. Students' in the experimental group were exposed to 5 sessions of treatment on guided-discovery. For each session, a total of 60 minutes was used on the average while participants in the he control group was exposed to normal lecture method. When the experiments was concluded, a post test was administered to see the effect of the treatment.

T-test statistical analysis was employed to analyse the data in this study. T-test was used so as to see if there was any significant difference in the Economics performance test of participant in treatment group and control as well as instructional materials utilization level.

Results

The study examined the experimental investigation of guided-discovery teaching method and instructional materials utilization on secondary school students Economics performance in Oyo State, Nigeria. Two (2) null hypotheses were developed and tested at 0.05 level of significance. The results are presented in tabular form:

Hypothesis One: There is no significant difference between the Economics performance of secondary school students exposed to guided-discovery teaching method and those in the control group

Table 1: An independent t-test of Students Exposed to Guided-Discovery teaching method and those exposed to Conventional Lecture Method

Groups	n	Mean	SD	Std. Error	DF	t-value	P-value	Remark
Guided-Discovery	38	57.32	8.12	3.00	76	43.67*	0.000	* S
Lecture Method	40	15.97	1.65	2.34				

* Significant at $p < 0.05$

The result in table 1 showed that a significant different exist between the performance of secondary school students in Economics who were exposed to guided-discovery teaching method and those in the control group ($t(76) = 43.67^*$, $p < 0.05$). The mean value of the table further revealed that the students taught with guided-discovery teaching method had higher Economics performance than their counterpart taught with lecture method. This further meant that guided-discovery teaching method had significant influence on Economics performance of secondary school students.

Hypothesis Two: No significant difference exist between secondary school students performance in Economics who were taught with instructional materials and those without instructional materials

Table 2: Summary of t-test of Adolescents with High and Low Instructional materials utilization

Groups	n	Mean	SD	Std. Error	DF	t	P	Remark
With Instructional Materials	33	49.63	3.78	1.89				
Without Instructional Materials	45	15.28	1.58	0.82	76	33.41	0.001	* S

* Significant at $p < 0.05$

Table 2 revealed that there was significant difference between the Economics performance of secondary school students taught with instructional materials and those that was taught without instructional materials ($t(76) = 33.41, p < 0.05$). The mean value of the table further revealed that the students who were exposed to instructional materials when teaching had a higher Economics performance than their counterpart taught without instructional materials. This further meant that instructional materials utilization had significant influence on Economics performance of secondary school students.

Discussion

The result in Table 1 showed that a significant difference exist between Economics performance of secondary school students exposed to guided-discovery teaching method and students in the control group. The mean value of the table further revealed that the students taught with guided-discovery teaching method had higher Economics performance than their counterpart taught with lecture method. This further meant that guided-discovery teaching method had significant influence on Economics performance of secondary school students. This is in line with the study of Mayer (2003) who found that the use of guided-discovery teaching put students at the center stage where they are encouraged to take a more central and active role in their learning process by answering series of questions or solving problems designed to introduce a general concept. Nelson (2004) pointed out that guided-discovery act as a motivator to help students overcome difficulties, by providing illustrative materials for students to study on their own, and provide reasonable answers to questions asked. Guided-discovery method enables learners to create their own learning experience, with the guidance of their teacher. This method has recently been emphasized in modern teaching. It has been identified as providing meaningful learning and thus teachers are encouraged to use them. Guided-discovery method involves an unstructured exploration in some problem-solving experiences in which students can draw general conclusions from data gathered through measuring, classifying, inferring, predicting,

communicating, analyzing, clarifying, describing and formulating relevant questions (Adu and Galloway, 2015; Moses, 2003).

The result of Table 2 revealed that a significant difference exist between the Economics performance of secondary school students who were introduced to the use of instructional materials during teaching and those without instructional materials. The mean value of the table further revealed that students taught with instructional materials had higher Economics performance than their counterpart taught without instructional materials. This further meant that instructional materials utilisation had significant influence on Economics performance of secondary school students. This is consistent with the finding of Agina-Obu (2005) and Owoyele and Muraina (2016) who found that instructional materials provide sound, visual or both to the sense organs during teaching. The influence of instructional materials in promoting students' academic performance and teaching of Economics is indisputable. There have been several studies on instructional materials and academic achievement of students. For instance, Isola (2010) correlated instructional materials usage with academic achievement of students in ten subjects in Kwara State include Economics. In the same manner, Odukwe (1983) carried out a research in Ilorin, Kwara State and found that the use instructional materials are related to students' achievements in each of the selected subjects.

Conclusion

Based on the findings of the study, it was concluded that secondary school students taught with guided-discovery and instructional materials performed better than their counterparts taught using lecture teaching method and without in instructional materials. Teachers should therefore adopt the use of guided-discovery and instructional materials to enable students develop interest in Economics, understand the subject better and perform excellent in both internal and external examinations. Persistent low Economics performance of Nigerian secondary school students need not to continue indefinitely. There is hope that with the improvement of instructional materials utilisation and guided-discovery teaching method, the situation can be changed for the better. The study found that instructional materials utilisation and guided-discovery teaching method influence the Economics performance of secondary school students. By and large, instructional materials utilisation and guided-discovery teaching method had a great influence on the Economics performance of secondary school students.

Recommendations

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

1. Educational stakeholders should intensify their effort to organize seminars/conferences on the implications of guided-discovery teaching method as

effective teaching method in enhancing Economics performance of secondary school students.

2. Teachers and other stakeholders in the school system are to be trained on how to improve on the instructional materials utilisation and guided-discovery teaching method. This will serve as collaborative efforts in overcoming the challenges of low Economics performance of secondary school students.
3. The school management should always intensify their efforts in making appropriate instructional materials available for the teachers in the school. This will make the teachers to effectively utilise the materials in teaching in order to enhance academic performance of the students.
4. The curriculum planners and policy makers should include effective teaching strategies/methods into teacher training institutions/programmes. This will help in sharpening the skills of teachers towards instructional content delivery so as to enhance the students' academic performance.

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