

## Effect of guided-discovery technique on Colleges of Education Social Studies students' learning outcome

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### ABSTRACT

This study examined the effect of Guided-Discovery (GD) technique on Colleges of Education Social Studies students' learning outcome in Nigeria. The study employed 2x2x2 randomized research design. A total of 100 students participated in the study, consisted of 50 GD and 50 Lecture Technique. Social Studies Performance Tests (SSPT) was used to collect data. It was designed using National Commission for Colleges of Education curriculum and validated by four Social Studies experts. The reliability value of 0.82 was obtained for the instrument using Cronbach Alpha. ANOVA and t-test were used for data analyses. This study found that GD technique of teaching Social Studies was next in producing higher significant effect in students' learning outcome than LT. Gender has no significant interactive effect on students' learning outcome in Social Studies. The mode of entry had no significant interactive effect in the learning outcome of Colleges of Education Social Studies Students. The study concluded that GD was found to be more effective in enhancing Social Studies Students' learning outcome in Colleges of Education. It was recommended that GD technique should be used in teaching Social Studies in Colleges of Education.

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### 1. INTRODUCTION

Among the core subjects offered in the Nigerian basic schools 1-9 is Social Studies. The increasing number of institutions coupled with the improved enrolment level have necessitated the production of trained teachers specially trained and equipped with the knowledge and special skills for implementing the Social Studies programme in the schools [1]. This is because the Nigerian society is blessed with diversity of people, cultures and traditions, environment and aspirations. The major objective of Social Studies is to promote the understanding of the diversity, foster unity and make people to generate desirable social attitudes such as: self-discipline, social and moral responsibility [2]. The subject's fundamental concern is human and their complex relationships with the world around them and beyond. It is premised on this that the Nigeria Certificate in Education (NCE) Social Studies curriculum is fabricated in such a manner that it would instil in the students the basic knowledge, desirable values and skills for investigating, analysing and explaining these inter-relationships. The relevance of Social Studies is primarily to help the individual to look at his society and to understand its problems for which he should help to seek solutions. Different societies have different problems; hence the conception of Social Studies for any given society must take into account the peculiarities of each society [2].

Although there are various concepts of Social Studies, the conception of the course in the Nigerian society must be very closely tied to the needs and challenges of the society as they occur over time. The subject focuses on problems of human's survival in the process of interactions with the environment. Therefore, the NCE Social Studies' programme is carved with the objective of producing teachers with professional and academic competence as enshrined in its philosophy, content and methodology. Social Studies is a very important subject that encourages man to investigate and provide solutions to environmental problems surrounding him. It is therefore necessary that students studying Social Studies should understand the subject so that they can apply its knowledge in their everyday interactions with people and the ever changing environment [3]. According to Ajitoni, Nigeria was one of the nations that accepted the concept of environmental development at the Earth Summit in 1992, and this was due to, and in agreement to this announcement and the proceeding that the governments of some countries including Nigeria formed or gave accelerated support to environmental protection agencies and inclusion of environmental education to some core-subjects including, Social Studies, Geography, Agric Science, Biology (to mention but few), with the view to reversing the trends that were leading to ecological disaster. The issue of encouraging a favourable and sustainable environment became of increasing worry to most people and governments in the world. An impetus was given to the inclusion of some elements of Environmental topics into Social Studies and citizenship education curriculum in 1990 following the concerted effort of Nigerian Conservation Foundation (NCF) in 1988, and effort was intensified in 1991 [4].

Environmental studies topics in Social Studies were designed to develop citizens who are aware of and concerned about their total environment and its associated problems with the knowledge, attitudes, motivation, commitments, skills to work individually and collectively towards solving current problems and prevention of new ones. The objective of Environmental Studies topics in Social Studies therefore, are to develop awareness, knowledge, skills, attitudes, evaluation ability and participation in environmental issues. It is believed however that these objectives cannot be realised by government agencies and the promulgation of laws alone, rather, environmental studies topics must be integrated into all teacher's preparation programmes. Current inadequate environmental ethics, ignorance or inadequate environmental awareness, lack of knowledge and skills can only be removed through education. Therefore, these objectives necessitated the inclusion of environmental topics in the NCE Social Studies curriculum so as to instil in the students the basic knowledge of environmental studies. It is therefore, believed that if teachers in training are adequately orientated, they will develop an early awareness of environmental problems and will ultimately impact it on their students. By so doing, ignorance, which is one of the causes of the environmental problems, can be averted. The conception of Citizenship Education in Botswana is driven by Social Studies as subject taught across all levels of education. There was deterioration in the performance of students in Social Studies and that there is disturbing decline in performance in most schools in Botswana [5].

In recent years, various studies have laid emphasis on the importance of active, meaningful, effective and students' engaging learning in schools and classrooms. This common position, coupled with the recognition of the dynamic needs of the 21st century are stimulants to the development of specific indicators of active, meaningful and engaging learning [4]. As earlier indicated, teachers prefer to use the traditional lecture/expository method instead of engaging in innovative activity-based methods that engage students in hands-on and minds-on activities like discovery, concept-mapping, vee-mapping conceptual change and semantic networking. Other innovative methods include laboratory approaches, co-operative learning, field-trip, and so on [6]. In as much as researches have consistently shown the preponderant weaknesses in the traditional methods of teaching [7]-[9], it is necessary to use other methods that will encourage students active participation that can make them acquire, produce and use knowledge more meaningfully. The use of conventional teaching technique, a major reliance on the traditional "chalk and talk" technique of instruction whereby the teacher does most of the talking, contributed to the students' lack of proper understanding of the subject matter [10]. The former instructional methods included those methods of instruction that involved verbal exposition by the teacher, such as, lecture and tutorial method [11]. Guided-discovery is an effective teaching technique used to lead students towards educational goals and allow them to be active participants in their learning. Teachers use guided-discovery to stay actively involved, not only as an instructor but also as a facilitator.

Social Studies being a dynamic school subject, and by virtue of its integrated nature and philosophy, is highly affective and value-laden [12]. Hence, it is necessary to examine what goes on in the Social Studies classroom with a view of assessing its efficacy in promoting the objectives of Social Studies teaching in Nigeria [13]. According to Jegede, Okebukola, and Alaiyemola [14], the desire to improve learning outcome through more effective instructional techniques and the increasing exposure in recent years on the importance of the learner-centeredness technique of instruction in the teaching process has directed a lot of attention to understand how learners learn, and how to help them achieve knowledge of concepts. Therefore, there is the need to define the word concept.

Guided-discovery technique is one of the teaching technique that encourages students to play more active role in the learning process through answering of series of questions or problems solving designed to introduce a general concept [15]. In this teaching approach, the teacher guides the students' thought process by posing at them a series of questions whose responses would lead the students to the understanding of what is explicitly stated. This teaching technique is assumed to increase retention of materials because the students acquire the new information and integrates it with already stored information [16]. Guided-discovery is a method by which inquiry skills and information processing skills are developed by learners. Learners are totally involved with people, materials, and the environment, but are however using this awareness to generate concepts and facts. Guided-discovery is characterized by convergent thinking. The instructor devises a series of statement or questions that guide the learner step by step into making a series of discoveries that lead to a single predetermined goal. In other words, the instructor initiates a stimulus and the learner reacts by engaging in active inquiry that lead to discovering the appropriate responses [17]. This method of teaching might improve students' learning outcome, if properly employed for the teaching of concepts.

Students' learning outcome is ability of student to comprehend, understand, assimilate and learn in any area of study embarked upon. Learning outcome is arrived at by their learning ability which is different in term of their intelligence. [18] defined students' learning outcome as the level of attainment of a person in an examination; that is, how an individual is able to demonstrate his or her ability in examination. This implies that, the students' ability to learn depends on their comprehension of concepts or idea irrespective of gender. Gender is those socially constructed roles, established behaviours, activities and attributes considered appropriate for men and women by a given society. It varies across cultures and over time. Gender is a term used to describe the status of people as men, women, boys and girls including characteristics of masculinity and femininity that are learned or chosen. It is the state of being a male or a female (usually associated with social and cultural differences rather than biological ones). This implied that the ability to comprehend a specific content must not be associated with difference in gender or area of specialization.

Mode of entry to schools refers to various method of admission of students into tertiary institutions in Nigeria. Three categories of students are being admitted into University undergraduate programs in Nigeria. These include those admitted through the Unified Tertiary Matriculation Examination (UTME), direct entry admission, both overseen by Joint Admission and Matriculation Board (JAMB), and those who passed through remedial programmes overseen by individual Universities. Each of the three groups have varying academic experiences and hence the basis for differences in their Modes of Entry (MOE) into Universities, Colleges of Education and Polytechnics. Therefore, it is necessary to examine what is responsible for differences in students' learning outcome, by examining different qualifications required for admission into tertiary schools.

Guided-discovery instructional strategy provides students with a problem and opportunities for exploration to provide solution to any given problem while the teacher guides students to develop problem-solving skills and ability to be creative in thinking. The concept-mapping instructional technique mode enables student to show relationship between new concepts and already known ideas which are presented diagrammatically. It enables learners to interact and engage in the process of constructing knowledge. Akanmu and Fajemidagba [19] conducted a study that investigated the effect of guided-discovery learning strategy on students' learning outcome in Mathematics alongside influence of gender with a sample of two hundred and two (202) SSI Students from two selected public co-educational schools in Ejigbo Local Government Area of Osun State. The research was a quasi-experimental design with a 20-item multiple choice Mathematics Achievement Test drawn from West African Examination Council past questions on Set Theory as the main instrument for data collection. A significant difference in favour of those exposed to guided-discovery learning strategy compared to those not taught using guided-discovery learning strategy was revealed in the result. Although both male and female students performed equally well when taught using guided discovery strategy. Therefore, since these relatively new techniques were found to be effective in teaching science subjects, especially Biology, Chemistry, Mathematics and Physics; it is assumed that they will be effective in teaching social science subjects especially Geography, Social Studies, History and Religion Studies. Most of the studies [3], [19]-[21] were conducted in both junior and senior secondary schools. There seems to be no record of relevant studies conducted in the Colleges of Education. In the light of these, it is necessary to investigate the efficacy of these relatively new techniques, particularly GD in teaching Social Studies at tertiary level of education (NCE). Therefore, this study examined the effect of GD on students' learning outcome in Social Studies in Colleges of Education in Kwara State.

The general purpose of this study was to examine the effect of GD and LT on Students' learning outcome in Social Studies in Colleges of Education in Kwara State. Specifically, the study sought to examine Colleges of Education students' academic performance of in Social Studies based on exposure to GD and LT, interaction effect of gender on the learning outcome of Colleges of Education students in Social Studies

based on exposure to GD and LT and interaction effect of mode of entry (Pre-NCE and UTME) on the learning outcome of Colleges of Education students in Social Studies based on exposure to GD and LT. Three hypotheses were generated and tested at 0.05 for significance. They are:

- H<sub>01</sub>: There is no significant effect in the learning outcome of Colleges of Education Social Studies Students exposed to Guided-Discovery (GD) and Lecture Technique (LT).
- H<sub>02</sub>: There is no significant interaction effect of gender on the learning outcome of Colleges of Education Social Studies Students exposed to GD and LT.
- H<sub>03</sub>: There is no significant interaction effect of mode of entry on the learning outcome of Colleges of Education Social Studies Students exposed to GD and LT.

## 2. RESEARCH METHOD

This study employed the post-test-control-groups-quasi-experimental-design involving 2x2x2. The subjects were randomised because of the large number of students' involved which may likely affect the validity and reliability of this study. The population for this study consisted of all Social Studies Students in Colleges of Education in Kwara State, Nigeria. There are eight Colleges of Education in Kwara State. Three of them are state government owned, located in the three Senatorial Districts, namely: Kwara State College of Education, Oro (Kwara South), Kwara State College of Education, Ilorin (Kwara Central) and Kwara State College of Education (Technical) Lafiagi (Kwara North). Four of these Colleges of Education are privately owned, out of which three of them were located in Kwara Central Senatorial District, these are: Muyideen College of Education, Ilorin; Kinsey College of Education, Ilorin and Nana Aishat Memorial College of Education, Ilorin, and College of Education, Ilemona, Kwara South Senatorial District. The only Federal Institution offering NCE is Nigeria Army School of Education Sobi, located in (Moro LGA) Kwara North Senatorial District.

The sampling procedure for this study was multi-stage. For the purpose of this study, public Colleges of Education namely: Kwara State College of Education, Ilorin, Kwara State College of Education, Oro were purposively sampled to participate in the study. This is because they are public Colleges of Education owned by the Kwara State Government. College of Education, Ilemona was purposively sampled because it has been in existence since 2006 when compared to other private colleges of education in the state; her courses have been fully accredited long ago and it is the only private College of Education that is located outside the state capital, while the other private colleges of education are concentrated in the state capital. All these conditions were observed to ensure external validity of the treatment among the groups. The assignment of these colleges into control and experimental groups was carried out using simple random sampling technique. The post-test items were researcher designed with the aid of the Bloom's taxonomy educational objectives. Therefore, Environmental Studies (SOS 126) was used as Social Studies Performance Test. This was used to elicit information from the participants after treatment have taken place. The data generated here were used as dependent variables.

The validity of Social Studies Performance Test (SSPT) was carried out by four Social Studies experts. These are researcher's supervisor from the Department of Social Sciences Education, University of Ilorin and two lecturers of Educational Research Measurement and Evaluation. They found the language, face, content and construct of these instruments valid. The reliability index of the instrument was ascertained through split half technique. The choice of split half was as a result of the short period of semester system adopted in Colleges of Education which did not allow for the longer time required for the test- re-test method. The instrument was administered to students in one College of Education which did not participate in the actual study. In the school, thirty (30) NCE I Social Studies students were sampled for this pilot study. The data obtained from the pilot study were recorded on the statistical coding sheets and subjected to split-half reliability method. The reliability co-efficient of 0.82 Cronbach's Alpha value was obtained. Three research hypotheses were tested using one-way ANOVA for hypothesis one and independent t-test statistical technique for hypotheses two and three.

## 3. RESULTS AND DISCUSSION

- H<sub>01</sub>: There is no significant difference in the learning outcome of College of Education Social Studies Students exposed to Guided-Discovery and Lecture Technique of Instruction.

Table 1 shows that the calculated F-Value is 273.73 with degree of freedom 2 and 149 which is significant at 0.05 alpha level. The null hypothesis one is rejected since the significance value (0.000) is less than 0.05 alpha level (0.000<0.05). This implies that there is a significant difference in the learning outcome of Colleges of Education Social Studies Students exposed to Guided-Discovery and Lecture Technique of

instruction. In order to know where the significant difference lies, Duncan Post Hoc analysis was conducted and the result is shown in Table 2.

Table 1. Summary of results of one-way ANOVA on the social studies students' learning outcome in the GD and LT groups

Source of variance	Sum of squares	df.	Mean square	Cal. F-Value	Sig.	Decision
Between groups	12144.25	2	6072.12			
Within groups	3260.82	147	22.18	273.73	0.000	Significant
Total	15405.07	149				

P<0.05

Table 2 shows that the learning outcome of College of Education Social Studies Students in Control Group has the mean score of 50.4000 in subset 1. The learning outcome of Social Studies Students in Guided-Discovery Group has the mean scores of 61.5000 in subset. This implies that the learning outcome of Colleges of Education Social Studies Students in Guided-Discovery group is the better. That is, students in this group outperformed their colleagues in the two other groups. It is followed by students' learning outcome in Guide-Discovery group with 61.5000 mean score and students' learning outcome in control group performed the least.

Table 2. Post hoc analysis of observed significant difference among the learning outcome of Colleges of Education Social Studies students exposed to guide-discovery and lecture technique

Groups	N	Subset	for alpha	=0.05
		1	2	3
Control group	50	50.4000		
Guided discovery	50		61.5000	
Sig.		1.000	1.000	1.000

H<sub>02</sub>: There is no significant interaction effect of gender on the learning outcome of Colleges of Education Social Studies Students exposed to Guided-Discovery and Lecture Technique.

Results in Table 3 shows that the calculated t-value is 0.50 with 148 degree of freedom were computed at (0.05) alpha level, while significance value is 0.61. Therefore, hypothesis two is hereby retained i.e. accepted since the significance value 0.61 is greater than 0.05 alpha level (0.61>0.05). This implies that there is no significant interaction effect of gender on the learning outcome of Colleges of Education Social Studies Students exposed to Guided-Discovery and Lecture Techniques of instruction.

Table 3. Summary of result of t-test analysis of the learning outcome of colleges of education social studies male and female students exposed to guided-discovery and lecture technique

Gender	N	Mean	Std.	df.	Cal. t-value	Sig.(2- tailed)	Decision
Male	66	60.9697	8.81427	148	0.50	0.61	Not significant
Female	84	61.8214	11.15516				

P > 0.05

H<sub>03</sub>: There is no significant interaction effect of mode of entry on the learning outcome of Colleges of Education Social Studies Students exposed to Guided-Discovery (GD) and Lecture Techniques (LT).

The results in Table 4 shows that t-value is 0.39, with degree of freedom of 148 while its significance value is 0.69 at alpha level of 0.05. Since the significance value is greater than 0.05 alpha level (0.69>0.05) hypothesis three is hereby retained i.e. accepted. This implies that there is no significant interactive effect of mode of entry on the learning outcome of College of Education Social Studies Students exposed to Guided-Discovery and Lecture Techniques of instruction.

Table 4. The t-test showing the learning outcome of colleges of education social studies students based on students' mode of entry exposed to guided-discovery and lecture technique

Mode of entry	N	Mean	Std.	Df	Cal.t-value	Sig.(2-tailed)	Decision
UTME	126	61.3016	10.32300	148	0.39	0.69	Not significant
Pre NCE	24	62.2083	9.48215				

P>0.05

Finding in this study revealed that Guided-discovery of teaching Social Studies produced higher significant effect in students' learning outcome, which was followed by Lecture Technique (LT) that was reported to be the least effective in the teaching and learning of Social Studies in Colleges of Education. This finding supports earlier report by [22] on Physics students; [3] on Chemistry students; [23] on Biology students; [19] on Mathematics students and [24], on Chemistry students, they reported that guided-discovery instructional strategy is highly effective in facilitating students' learning outcome when compared with lecture technique of instruction. This finding might be due to the fact that GD has the benefit of improving intellectual potency by enhancing the learner's ability to organise and classify concepts etc.

The second finding reveals that there was no significant interactive effect of gender on the learning outcome of Social Studies Students exposed to Guided-Discovery and Lecture Technique of instruction in colleges of education in Kwara State. The learning outcome of Social Studies male and female Students exposed to GD and LT mean scores of male and female revealed that gender has no significant interactive effect on the learning outcome of Social Studies male and female students exposed to GD and LT. This finding is consistent with previous studies like [3], [22] that found no significant difference in the achievement of both male and female Chemistry students taught using Guided-Discovery teaching strategy among Senior Secondary School Students in Bauchi. This may be true because any good teaching techniques adopted to teach might not discriminate between sexes. The present study uphold the findings of previous studies which revealed that, there was no significant interaction effect of gender on the learning outcome of students in different disciplines as identified and Social Studies students exposed to GD & LT instructions in Colleges of Education. This could be attributed to the fact that students' interaction and the subsisting democratic environment might have eliminated the possibility of discrimination during learning exercise. Also, Social Studies curriculum is gender friendly and sensitive to mans' interaction in environmental studies contents of Social Studies curriculum.

The third finding indicated that the mode of entry has no significant interactive effect in the learning outcome of College of Education Social Studies Students admitted through UTME and Pre-NCE. The finding shows that the total population of Social Studies Students admitted through UTME is 84.0% and those admitted through the Pre-NCE have 16.0% i.e. the population of students admitted through UTME is higher than those admitted through Pre-NCE mode, which indicated that students in both mode of entry were not proportionally equal in term of admission opportunity. This means that, the mode of entry does not have any interaction effect on students' learning outcome when good techniques of instruction are employed e.g. the use of GD instructional strategy. Therefore, this finding supported those of [25], [26] who separately reported that the learning outcome of students is not influenced by mode of entry/admission into colleges of education in Nigeria. They further stated that entry qualification does not determine students' academic performance.

#### 4. CONCLUSION

Base on the findings, it can be stated that the mode of entry does not have any interaction effect on students' learning outcome in Social Studies, as the study found that learning outcome of students is not due to mode of entry and students' qualification does not determine students' academic performance. Therefore, guided-discovery has noticeable effects on the learning outcome of Social Studies Students who were exposed to treatments. The results showed that GD instructional strategies significantly enhanced learning outcome of students in Social Studies. GD might have encouraged individual differences as well as made the process of learning to be self-sequenced, goal directed towards improved students' learning outcome. It can be concluded that mode of entry does not have any significant interaction effect on students' learning outcome in Social Studies, as the study found that learning outcome of students is not due to mode of entry/admission into Colleges of Education in Nigeria. Therefore, mode of entry and students' qualification does not determine students' academic performance. It could be concluded that subject specialization do not have any significant interaction effect on the learning outcome of Social Studies students that was exposed to GD and LT of instruction.

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