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EFFECTS OF TWO MODELS OF REFLECTIVE THINKING ON JUNIOR SECONDARY SCHOOL STUDENTS' ACHIEVEMENT IN SOCIAL STUDIES IN EBONYI STATE NIGERIA

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ABSTRACT :

The study investigated the effects of Kolb's and Gibbs' models of reflective thinking on junior secondary school students' achievement in Social Studies in Ebonyi State, Nigeria. A quasi-experimental design of Pretest-Posttest Non-Equivalent Control Group Design was adopted, involving 393 JSSII students across eight intact classes from four public schools. Students were exposed to either Kolb's or Gibbs' reflective instructional models over six weeks, and their achievement was assessed using the Social Studies Achievement Test (SOSAT). Data were analyzed using mean, standard deviation, and ANCOVA. Findings revealed that students taught with Kolb's model outperformed those taught with Gibbs' model, with no significant gender differences or interaction effects between model and gender. This suggests Kolb's model is more effective and gender-inclusive in enhancing academic achievement. The study recommends adopting Kolb's experiential learning in teaching Social Studies, integrating it into curricula, and training teachers on reflective teaching models to improve learning outcomes across genders.

Key Words: Reflective thinking, Kolb's or Gibbs' Reflective Instructional Models, Gender and Achievement.

Introduction

Ultimately, raising effective citizens is the primary goal of any viable education system. As a result, Social Studies as a subject was introduced to equip students with democratic values and civic skills which they require to function effectively as citizens in society. The introduction of Social Studies into Nigeria's educational system (like every other country) was based on this need to meet societal needs and aspirations, and use the education so gained to promote national integration (Nwaubani & Ezegbe,2008). Social Studies is seen as a subject at the junior secondary school curriculum which is considered very suitable for transmitting core societal values, skills, attitudes to learners to enable them become participative members of the community where they live. The objectives of Social Studies as stated in the National curriculum published by the Nigerian Education Research and Development Council (NERDC, 2007: ii) are to help students:

- **A.** Develop the ability to adapt to the changing environment;
- **B.** become responsible and disciplined individuals capable and willing to contribute to the development of the society;
- **C.** inculcate the right type of values in learners;
- **D.** develop the sense of comprehension as citizens towards other people,
- **E.** develop the capacity to recognize the many dimensions of being human in different cultural and social contexts;
- **F.** develop a sense of solidarity and sharing security in one's own identity.

Bearing the above objectives in mind, it is envisaged that proper teaching of Social Studies in junior secondary schools would no doubt enhance the attainment of the aims of Universal Basic Education (UBE) programmes in Nigeria such as ensuring the acquisition of appropriate level of literacy, numeracy, manipulative and communicative life skills as well as moral and civic values needed for successful living in the society. Although Social Studies is taught as a core subject at junior secondary school level in Nigeria, many students still record poor achievement in the subject (Examination Development Centre, Abakaliki, 2025). The issue of students' poor performance in a core subject like Studies has become a matter of concern for government, parents, researchers and other stakeholders in education. This poor achievement of students in Social Studies is evident from the result of students in the Basic Education Certificate Examinations (BECE) organized annually by the National Examination Council (NECO) in Ebonyi State. The result showed that from 2020, 2021, 2022, 2023 and 2024, the percentage of students who passed Social Studies at credit level is 42.33%, 40.10%, 44.47%, 42.90%, and 48.91 respectively. Some researchers have given reasons for this state of affairs. For instance, Ayodeji (2009); Eidinyang and Ubi (2013) submitted that poor achievement in Social Studies in junior secondary schools is primarily related to teachers and their method of teaching. Other factors identified are parents, movement and learning environment. The teacher is an important factor in the teaching and learning process. The success

or failure of students in the classroom does not only depend on students' ability and availability of instructional materials but also on the teacher's ability to use instructional methods/strategies that create interactive classroom activities for meaningful learning.

The curriculum document for teaching various subjects contains methods/materials that should be used for the teaching of the subjects. The curriculum for teaching and learning of Social Studies in junior secondary schools by NERDC recommended for the use of Reflection, Inquiry, Discussion, Collaborative Learning, Field Trip, simulation, and Cooperative learning among others. Though, the curriculum recommended the use of these methods to help learners participate actively and construct meaning of knowledge from experience, very few teachers were observed by the researcher to use field trip and simulation methods in teaching the subject. However, conventional methods still dominate the teaching of Social Studies in Ebonyi State (Ogene & Nnamani, 2016).

The conventional methods otherwise known as teacher-centred instructional approaches emphasize the transfer of knowledge, information and skills from the teacher to the learner (National Teachers' Institute, NTI, 2012). The emphasis in teacher-centered method is content coverage and does not allow students to think and initiate solutions to issue-based problems in Social Studies instruction (Salitu. 2015). The assumption of the teacher in asking questions in teacher-centred method is that students must get the answer to the questions correctly. As such, they see wrong answer as failure rather than avenue for improvement and continuous development. Although, consentional methods as mostly used by teachers are good in teaching large classes and allows for adequate coverage of the syllabus or curriculum contents within a specified time (lghokwe, 2009), it is not appropriate in helping students integrate their experiences in the classroom for meaningful learning. Despite the fact that some teachers use conventional methods in teaching Social Studies in junior secondary schools in Ebonyi state, there are still many teachers that use reflective thinking in teaching the subject as recommended by the curriculum. From observations and interactions with these teachers, the researcher observed that most teachers that used reflective thinking either use Kol's or Gibb's model while many other teachers are confused or lacked knowledge on the model of reflective thinking that is most appropriate in enhancing students' interest, achievement and retention in Social Studies. Although no method or models of teaching is adjudged the best, some methods can facilitate meaningful learning more than others. Korkmaz and Tay (2016) maintain that the usefulness of instructional methods in Social Studies classroom depends on the quality of teachers.

The teacher should be someone who creates a collaborative learning environment for learners to construct meaningful knowledge and ideas from experiences. According to Igbokwe (2009), a teacher is a facilitator and assessor of students' learning. The role of the teacher is to assist learners to acquire the requisite knowledge, ideas, skills and values through interactive classroom activities (Vermunt, 2014). Thus, the primary role of a teacher is to develop leaning activities through which students can acquire meaningful learning. Stronge, Ward and Girant (2011) maintained that the teacher's greatest responsibility is to develop in students a positive attitude towards and learning. The teacher needs to predict the possible needs of students and have social learning activities readily available to meet these modes. According to Ronfeld, Farmer, MeQuecn and Grissom (2015), teaching should he designed to enable learners to experience a high degree of success. Teachers are also expected to experience greater success in teaching when activities are planned around learners' needs.

The role of the teacher in instructional delivery includes encouraging the continuous process of helping students think and reflect on issue-based contents. However, how well a teacher demonstrates the above roles in Social Studies classrooms, depends on the instructional methods adopted in the teaching and learning process. The teaching of Social Studies requires the use of inquiry-related approaches that promote reflection and associated activities. This process enables learners to think and reflect critically and creatively on issue-based contents of subjects in the curriculum. The researcher wished to try the effect of reflection in teaching Social Studies because other methods stipulated by the curriculum are subsumed in reflection. Reflection is an aspect of thinking that brings about meaningful learning in the classroom. It is popularly referred to as reflective thinking in the literature of education (Melek, Ipek & Edibe, 2015).

The concept of reflective thinking was first introduced by John Dewey (Lambe,2011). Reflective thinking is a component of the learning process which involves the act of engaging in mental activities for understanding conflicting factors or issues in a situation (Dewey, 1993). Reflective thinking involves thinking, comprising thinking about an issue and evaluating it seriously in the mind (Dewey,1933). Dewey noted that reflection is the element that turns students' experience into learning. Hence, students come to the classroom with concrete experiences which is an integral part of the learning Social Studies contents deals with life and living, so students come to the classroom with different thoughts or experience. These experiences can be utilized to improve the interest and leaning Reflective thinking therefore, is the process of drawing inferences from students' experiences to encourage of facilitate meaningful learning. According to Dewey's theory of experiential earning. Reflective thinking is an active engagement of students in learning through careful investigation and activities to bring about meaningful learning (Hong & Choi, 2011).

Reflective thinking supports students taking responsibility for their learning, identifying their goals, assessing themselves, and participating in the learning process. Melek, Ipok and Edibe (2015) added that reflective thinking is learner-centered as it engages learners in series of questions and thinking processes that make learners construct knowledge among themselves without necessarily relying on the teacher for everything. It is anchored on the fact that learners come into class with certain life experiences which when explored brings about effective teaching and learning. The role of the teacher in the reflective classroom according to Timothy (2015) is to explore and filter students' experiences, bringing out the best for the benefit of the entire class. According to Kuz (2014), reflective thinking helps students to investigate, explain, organize, find causes, analyze, generalize, develop hypotheses, predict, assess, and synthesize issues and concepts within the framework of activities such as observation, modeling, writing and debating among others. There are many models of reflective thinking which teachers could adopt in teaching Social Studies in junior secondary schools. These models include Dewey's I-stage model, Neils 2 stage model, Greenway's 3-stage model, Scion's cyclic model. Agrippa's cyclic model, Kolb's 4-stage model, and Gibb's 6-stage model,

among others. The researcher sought to compare Kolb's and Gibb's models of reflective thinking to find out the mam effects on students' achievement, and retention in Social Studies.

Kolb's Experiential Learning model of reflection states that leaning involves the acquisition of abstract concepts that can be applied flexibly in a range of situations (Kolb & Kolb 2009). The author believes that the development of a new concept is provided by the new experience. The concept of experiential learning according to Kolb and Kolb (2009) centered on the transformation of information into knowledge. Kolb drew on Dewey's philosophy in proposing a 4-stage cycle model of experiential learning. This model suggests that a student has to be exposed to concrete experience (CE) followed by reflective observation (RO), then the formation of abstract conceptualization (AC) achieved via thinking, planning and analyzing the learning activities or (learning experiences) while the final stage is Active Experiment (AE) which is the stage that the learners develop new principles/concepts by engaging or doing the activities (Cropley, 2009). This process of reflection makes learning interesting and meaningful through the engagement of students in concrete and abstract thinking.

Gibb's Reflective Cycle Model was developed in 1988. The model gives structure to learning from experiences. It offers a framework for examining experiences, and given its cyclic nature lends itself particularly well to repeated experiences, allowing students to learn and plan from things that either went well or not in the classroom. Gibbs states that it is not sufficient simply to have experience to learn. Without reflecting upon this experience, it may quickly be forgotten, or its learning potential lost. It is from the feelings and thoughts emerging from this reflection that concepts can be made and these generalisations allow new situations to be tackled effectively (Gibbs, 1988). The model is a 6-step model that is designed to help identify students' experiences, areas for development and actions that they can take to enhance their learning, Steps 1-3 of the model relates to what happened during the experience and steps 4-6 focus on how students could improve on the experience and outcome in learning. These processes of thinking can help students to develop their achievement in Social Studies. Karatek in, Kus, and Sonmez (2010) maintained that students engaged in reflective activities demonstrate their feeling and share experiences in a supportive classroom. The Kolb's and Gibb's models of reflection have stages of learning process which could promote students' meaningful interactions which enhance students' achievement in the subject.

Achievement is the intended learning outcomes expected from students at all level of education. Fan, Odidi and Lacia (2016) defined academic achievement as competencies, knowledge, skills, and attitudes developed by students through active participation in teaching and learning activities. Korkmaz, Toblucnt and Tay (2016) also added that academic achievement is the learning ability of students in relation to behaviour, skill, knowledge, aptitude, values and attitudes which must be permanent. This shows that achievement could be the learning outcomes in cognitive, affective and psychomotor domain. Moira, Siobhan and Rosmary (2019) defined academic achievement as the students' ability to attain the knowledge demonstrated in the classroom learning activities through assessment grades or scores. The authors added that the determinants of academic achievement of students include class participation, class assignments, home-work assignments, tests, examinations, and participation in competitions of other events. Contextually, academic achievement is the extent to which students have achieved stated instructional objectives and long-term goals of education. It could be a procedural knowledge such as skills, values and behaviour or a declarative knowledge such as facts (Torsten, Philip & Heike, 2019).

There is no general agreement on how best academic achievement of students in Social Studies can be measured. In addition, there are inconclusive results over which individual factors successfully predict students' academic achievement in school. Achievement, however, does not only entail the ability of students to pass examinations or acquire relative skills in the three domains of knowledge (cognitive, affective and psychomotor) but also the ability of students to relate skills and knowledge to the solution of social problems ravaging the entire society as well as the ability to be creative in dealing with changes in the environment. Achievement in this study, therefore, is the ability of Social Studies students to demonstrate the acquisition of requisite creative knowledge, shills, and desirable values to solve the problem of the society such as prostitution, abortion, rape, vagrancy, robbery, lack of respect for elders, laziness and insubordination among others. Students come to the classroom with varied experiences which when reflected upon, could promote their achievement in the subject. Yasemin (2019), Salido and Dasati (2019) added that students need to engage in reflective thinking as it could help them to think critically and creatively, have a high level of problem-solving skills, make evaluations and analyse concepts and issues learned in the classroom which promote their achievement. However, students' achievement in Social Studies could be mar or facilitated by the interaction effect of gender.

Gender is another factor that could determine students' interest and achievement in Social Studies. Gender is the roles and expectations that society ascribes to the two sexes on a differential basis. Eugene and Ezch (2016) defined gender as a psychological term and a cultural construct developed by society to differentiate between the roles, behaviour, mental and emotional attributes of males and females. Tim (2018) also maintained that gender characteristics, therefore, result in cultural learning and socialization in the society which continues throughout one's life. It is not biologically determined but constructed according to different societies. These role expectations of people in different societies affect people's behaviour to learning. Nnenna and Adukwu (2018) maintained that it is common to see gender stereotypes manifesting in the day-to-day life of an average Nigerian. For instance, certain vocations and professions have traditionally been regarded as men's profession (medicine, engineering, and architecture) and others as women's (nursing, catering, typing, arts). Typically, parents call boys to wash cars, cut grass, fix bulbs, or climb ladders to fix or remove things while women are allowed to do chores and other works that are not strenuous. These activities at home could influence students thinking and participation in classroom task in schools.

The influence of gender on learning and achievement has remained a controversial and topical issue amongst educationists and psychologists. For instance, Chinwe and Charles (2014) and Nnamani and Oyibe (2016) hold that there is a significant difference in male and female students' achievement and ability in Social Studies, Conversely, Peter (2014), Ahdu-Rahcem (2014) and Eze, Ezenwafor, and Ofidile (2016) added that there is no significant difference between the mean achievement scores of male and female students in Social Studies. Perhaps, due to the inconclusive nature of the research findings with

regards to gender and achievement in Social Studies, it becomes necessary to find out the interaction effect of gender on students' achievement in Social Studies when exposed to reflective thinking instructional models. This underscored the need for the present study.

Statement of the Problems

Social Studies is a core subject in the Nigerian junior secondary school curriculum, designed to equip students with the knowledge, values, and skills necessary for responsible citizenship and societal development. Despite its critical importance, persistent evidence from both internal and external assessments shows that students' academic achievement in Social Studies remains disappointingly low in many Nigerian schools, including those in Ebonyi State. This poor performance has been attributed in part to the continued use of teacher-centered instructional approaches that fail to engage students in deeper levels of thinking and reflection. In an era that emphasizes learner-centered education, reflective thinking models such as Kolb's Experiential Learning Model and Gibbs' Reflective Cycle offer promising pedagogical alternatives. These models promote critical analysis, personal connection, and experiential learning, which are essential for meaningful understanding and academic success.

However, empirical studies comparing the effectiveness of these reflective models on students' academic achievement in Social Studies are scarce, especially in the context of junior secondary schools in Ebonyi State. Furthermore, there is limited evidence on whether gender moderates the impact of these models on learning outcomes. This gap raises urgent educational questions: Which model of reflective thinking: Kolb's or Gibb's more effectively enhances students' academic achievement in Social Studies? Does gender influence the effectiveness of these models? Addressing these concerns is vital for improving teaching strategies, promoting reflective learning, and ultimately enhancing students' academic achievement in Social Studies.

Purpose of the Study

The main purpose of this study was to determine the effects of two models of reflective thinking on students' interest, achievement and retention in junior secondary school Social Studies in Ebonyi State. Specifically, the study sought to:

1. ascertain the effects of Kolb's model and Gibb's model of reflective thinking on students' achievement in Social Studies.
2. determine the influence of gender on the achievement scores of students taught Social Studies with Kolb's model and those taught with Kolb's model of reflective thinking
3. determine the interaction effect of Kolb's model and Gibb's model of reflective thinking and gender on junior secondary school II students' achievement in Social Studies.

Research Questions

The following research questions guided the study;

1. What is the effects of Kolbs model and Gibb's model of reflective thinking on students' achievement in Social Studies?
2. What is the influence of gender on the achievement scores of students taught Social Studies with Kolb's model and those taught with Kolb's model of reflective thinking?
3. What is the interaction effect of Kolb's model and Gibb's model of reflective thinking and gender on junior secondary school II students' achievement in Social Studies?

Hypotheses

The following null hypotheses were tested at 0.05 level of significance to guide the study

- **HO_1:** There is no significant difference in the mean achievement scores of students taught social studies using Kolb's and Gibb's models of reflective thinking.
- **HO_2:** There is no significant difference in the mean achievement scores of male and female students taught Social Studies using Kolb's and Gibb's models of reflective thinking?
- **HO_3:** There is no significant interaction effects of gender, Kolb's and Gibb's models of Reflective thinking and achievement scores of students in Social Studies.

Methodology

The study adopted a quasi-experimental research design. The specific design for the study was Pretest Posttest Non-Equivalent Control Group Design. This design according to White and Sabarwal (2014) is a special type of design that allows for the comparison of group that are similar to each other in terms of baseline. The treatment variable is reflective thinking at two models: Kolb's model of reflection (Xi) and Gibb's model of reflection (X2), while the moderating variable is gender at two levels: male (Y1) and female (Y2). This design is considered appropriate for the study because intact classes were used and it would help to avoid distractions of normal class lessons. The design is symbolically represented as:

A 0_1 X_1 Y_1 O_2
B 0_1 X_2 Y_2 O_2

Where A=Experiment group 1

- B=Experiment group 2
- X_1=Kolb's Model of Reflection
- X_2 -Gibb's Model of Reflection
- 0_1=Stands for test before treatment (pretest)
- 0_2=Stands for test after treatment (posttest)
- Y_1 =Male; Y_2 =Female

The area of this study was Ehonyi State. Ebonyi State is one of the newly created states by the Abacha military administration in 1996 from Abia and Enugu States. Ehonyi State is situated in the South-Eastern part of Nigeria, it is bounded in the south by Abia State, in the north by Benue State, in the west by Enugu and in the Fast by Cross River respectively. Ebonyi is made up of three Education Zones: Abakaliki, Afikpo, and Onueke with 221 public junior secondary schools. Abakaliki Education Zone has seventy-one (71) co-educational junior schools and 7 single or same-sex schools; Onueke zone has fifty-nine (59) co-educational junior secondary schools and 5 single or same-sex schools, while Afikpo Zone has seventy-four (74) junior secondary schools and 5 single-sex schools. The population of the study comprised all the 23,189 JSSII students from Basic Education Board (EBSUBEB, 2025). The choice of JSSII students is that the class was not preparing for any external examination and more likely to respond to instructions because of their level of maturity. The topics treated fall within JSSII Scheme of work. The sample of the study consisted of 393 students from junior secondary schools in Ebonyi State. Simple random sampling technique was used to select two Education Zones (Abakaliki and Onucke Education Zone) from the three Education Zones in Ebonyi State. Purposive sampling technique was also used to select two schools from each of the two Education Zones selected making it four (4) schools for the experiments. This comprised two schools for the Experimental Group I and two schools for Experimental Group II. Eight (8) intact classes were used (two from each of the four schools). 208 students out of the total sample size of 393 were used for Experimental Group I (103 males and 105 females) and 185 students for Experimental Group II (90 males and 95 females).

The instrument for data collection was Social Studies Achievement Test (SOAT). The SOSAT is made up of two sections, A and B. Section A consisted the personal profiles of the respondent. Section B of the SOSAT and SOSRT comprised 50 multiple-choice items. The questions/items were generated by the researcher from past junior WAEC and NECO Basic Education Certificate: Examination (BECE) question papers. The test contained 50-multiple-choice items with four options lettered A-D each. Students had to choose the correct answers from the list of options provided. Questions 1-15 of the test covered information from living together in the family, questions 16-28 covers information on religion, questions 29-40 home appliances, while questions 41-50 covered questions on members of the school community. The 50-item test was scored 1 point each (50 Marks).

Two sets of lesson plans were used for the study, Kolb's Reflective Model Instructional Lesson Plans (KRMILPs) and Gibb's Reflective Model Instructional Lesson Plans (GRMILPs. The Lesson Plans were developed by the researcher on the Social Studies contents covering the topics of Living Together in the Family, Religion, Home Appliances and Members of School Community. The topics were used for teaching the research subjects. KRMILPs were used for Experimental Group I while GRMILPs were used for the Experimental Groups IL. The test together with the lesson plans were face validated by two lecturers from the Department of Arts Education (Curriculum Studies and Educational Technology) and one lecturer from the Department of Science Education (Measurement and Evaluation Unit), University of Nigeria Nsukka. The Lecturers made corrections on specific purposes, research questions, research design, populations and sample, the lesson note, reliability of the instrument and the instructional procedure. They corrected the tenses and the suitability of the achievement test in addressing the contents of the lesson plans. The validators also indicated that the number of questions assigned to each level of the cognitive domain should be stated in each cell of the table of specification to avoid confusion.

A table of specification was used by the researcher to ensure the content validity of the instrument. The table of specification was also validated by the experts used in the validation. They vetted the weight given to each topic of the lesson plans of Living Together in the Family, Religion and Home Appliances and Members of School Community also the weight given to the levels of educational objectives. Their modifications and corrections are seen in the final draft of the instruments. To establish the reliability of the SOSAT, the instrument was administered to 30 Social Studies students from Abakaliki High School (PRESCO) that was not selected as the sample schools. Since the instrument is dichotomously scored, Kuder-Richardson Reliability Estimate (K-R20) was adopted. K-R20 version of Kuder-Richardson Reliability Estimate was used since the items are of the same difficulty level, and the answer to the test items are scored cither right or wrong. A reliability index of 0.75 was obtained for the instrument. As a result of the high reliability index, the instrument is considered suitable for the study

Experimental Procedure

Teachers in the selected schools served as the experimental teachers in the study and they were trained for one week by the researcher on how to teach using the lesson plans. Social Studies teachers were given the validated lesson plan to enable them to get used to the lesson plans. This is to reduce teacher personality variable or bias. The researcher prepared a time table for monitoring the teachers' teaching in their respective schools during the experiment. On the first day of the experiment before treatment commenced, the Social Studies Achievement Test (SOSAT) was administered to the students of both schools as a pretest. Four schools hosted the experimental groups (two schools for each). Two instructional models were employed during the study namely: Kolb's Reflective Instructional Model and Gibb's Reflective Instructional Model. The two models are identical in terms of content coverage, time and mode of evaluation but differ in terms of mode of instruction. The two experimental groups from each school were taught for Six 6) weeks. Regular Social Studies teachers taught the topics in experimental group 1 using lesson notes on Kolb's Reflective Instructional Model. In the other two schools, their regular Social Studies teachers also taught the intact classes using lesson notes on Gibb's Reflective Instructional Model. The aim of one teacher teaching in one school is to avoid contamination of treatment if one school is used for the two instructional models. At the end of the treatment,

post-test for SOSAT was administered to the students. Test items for post-tests are the same as the pre-tests except that the questions were reshuffled. The posttest was further reshuffled and used as a retention test after two weeks. Data for the pre-test and post-test were recorded separately for each of the students in the two experimental schools and were used for analysis according to the demands of the research questions and hypotheses. The data collected from the subjects were analysed to answer research questions and the respective research hypotheses. In order to control extraneous variables that would likely affect the conduct of the experiment and the results of the study, the following measures were taken:

Experimental Bias: Intact classes of the sample schools were used so that the administrative set up of the schools was not disrupted. This helped to prevent the creation of any form of awareness on the research. The actual teaching of the experimental groups was carried by the regular Social Studies teachers. The regular teachers in the participating classes were trained by the researcher to do the teaching. This is to avoid possible bias by the researcher
Research Subjects' Interaction: The two experimental groups were not carried out in the same school. The schools that were used are far away from each other to avoid the interaction. This makes any form of interaction among the research subjects difficult.
Initial Group Differences: To eliminate the error of non-equivalence or effect of initial group differences arising from non-randomization of research subjects, Analysis of covariance (ANCOVA) was used for data analysis. The sample schools were ones that have close similarities in terms of availability of Social Studies teaching resources, conducive classroom among others.
Effect of Pre-test on Post-test: The posttest was adequately reshuffled. In addition, the 6 weeks duration of the experiment was long enough to cancel out the effect of pre-test on post-test achievement.

The data collected with SOSAT were analyzed using the mean and standard deviation of the test scores and Analysis of covariance (ANCOVA). Mean and standard deviation of the test scores were used to answer the research questions posed while Analysis of covariance (ANCOVA) was used to test the null hypotheses stated at 0.05 level of significance. ANCOVA was appropriate to analyse data in this study because there was no randomization of subjects. Hence, the use of ANCOVA was used to avoid the error of non-equivalence and reduce the initial group differences due to the non-randomization of subjects. It equally helped to block off the effect of pretest on the posttest by treating the pretest as a covariate. Finally, there was a test of assumptions of ANOVA.

Results

The results of the study were presented in tables based on the three research questions and three null hypotheses.

Research Question 1: What is the effect of Kolb's model and Gibb's model of reflective thinking on students' achievement in Social Studies

Table 1: Mean (X) Achievement and Standard Deviation (SD) Scores of students taught

Groups	Pretest Mean Score	SD	Posttest Mean Score	SD	Mean diff.
Exp Group 1 (N=208)	17.24	5.08	37.09	4.99	19.86
Exp. Group II (N=185)	16.83	3.10	28.64	5.01	11.81

Data in Table 1 shows the pretest mean and standard deviation achievement scores of the Experimental Group I (M=17.24, SD=5.08), and that of the Experimental Group II (M=16.83, SD=3.09). This means that the two groups have almost the same achievement baseline before instructional treatment. Hence, the students were of the same ability level. It also showed the posttest mean and standard deviation score of the Experimental Group 1(M=37.09, SD=4.99), and that of Experimental Group II was (M=28.63, SD=5.01). It also showed the mean difference of students in pretest and posttest for the Experimental Group I and Experimental Group II are 19.86 and 11.81 respectively. It indicates that students in Experimental Group I had higher mean gain than those in Experimental Group I. Therefore, students taught Social Studies with Kolb's model of reflective thinking had higher achievement scores than those taught with Gibb's model of reflective thinking.

Research Question 2: What is the influence of gender on the achievement scores of students taught Social Studies with Kolb's model and those taught with Gibb's model of reflective thinking?

Table 2: Table 1: Mean (X) Achievement and Standard Deviation (SD) Scores of male and female students taught Social Studies with Kolb's model and those taught with Gibb's model of reflective thinking

Method	Gender	SD	Pretest Mean Scores	SD	Posttest Mean Score	SD	Mean Diff.
Experimental	Male	103	16.43	3.27	36.69	5.47	20.27
Group I	Female	105	18.03	3.36	37.47	4.48	19.45
Experimental	Male	90	16.30	3.31	28.47	5.91	12.17
Group II	Female	95	17.33	2.80	28.80	4.00	11.46

The Data presented in Table 5 shows that the pretest achievement means and standard deviation scores of male students in Experimental Group I (M=16.43, SD=3.27), and that of females in the same group M=18.03, SD=3.36). It also showed the pretest mean achievement and standard deviation score males in the Experimental Group II (M=16.30, SD=3.31), and that of females ((M=17.33, SD=2.80). It could be seen that female students in the

entire group achieved a little higher in the same achievement baseline before instructional treatment. It equally showed the posttest mean and standard deviation scores of male students in Experimental Group I (M=36.70, SD=5.47), and that of female students (M=37.48, SD=4.48). The table finally showed the mean and standard deviation score of male students in the Experimental group II (M=28.47, SD=5.91), and that of female students (M=28.80, SD=4.00). It shows from the result that after the instructional treatment, female students in experimental group I achieved almost the same with that of male students with just little mean difference of 0.82 which is insignificant number showing that the differences that exist between male and female students in Kolb's Model of reflective thinking activities are not much. The same thing applies to Experimental Group II. It equally indicates from the mean differences that both male and female students Taught Social Studies using Kolb's Model of reflective thinking achieved higher than those taught using Gibb's Model of reflective thinking. This shows that male and female students taught Social Studies with Kolb's model had almost the same mean achievement scores and the something to students taught using Gibb's model of reflective thinking.

Research Question 3: What is the interaction effect of Kolb's model and Gibb's model of reflective thinking and gender on junior secondary school II students' achievement in Social Studies?

Table 3: Mean (X) and Standard Deviation (SD) Scores on the Interaction Effect of Kolb's Model and Gibb's Model of Reflective Thinking and Gender on Students' achievement in Social Studies

Methods	Gender	N	Pretest Scores Mean	SD	Posttest Scores Mean	SD
Experimental Group I	Male	103	16.43	3.27	36.70	5.47
	Female	105	18.03	3.36	37.48	4.48
Experimental Group II	Male	90	16.30	3.31	28.47	5.91
	Female	95	17.34	2.80	28.80	4.00

Table 8 showed the pretest mean achievement and standard deviation scores of male students in Experimental Group (M=16.43, SD=3.27), and that of females in the same group. It also showed the pretest mean and standard deviation of males in are (M=18.03, SD=3.36) the Experimental Group II(M=16.30,SD=3.31),and that of females(M=17.34,SD=2.80)It could absent that female students in the entire group achieved a little higher in the same achievement baseline before instructional treatment but the mean differences are insignificant The table equally showed the mean achievement and standard deviation scores of male students in Experimental Group(M=36.70,SD=5.47), and that of female students (M=37.47,SD=0.48). The table further showed the mean achievement and standard deviation scores of male students in the Experimental group II(M=28.46,SD=5.91),and that of female students(M=28.80,SD=4.00).This result indicates that both male and female students operate in the same achievement baseline after instructional treatment, indicating that both Kolb's and Gibb's model of reflective thinking and gender have interaction effect on students' achievement in Social studies in Junior secondary schools in Ebonyi State.

Hypotheses

$H0_1$: There is no significant difference in the mean achievement scores of students taught Social Studies using Kolb's and Gibb's models of reflective thinking.

Table 4: Summary of Analysis of Covariance on the Significant Difference in the Mean achievement Scores of Students taught Social Studies using Kolb's and Gibb's Models of Reflective Thinking

Dependent Variable: Posttest					
Source	**Type III Sum of Squares**	**Df**	**Mean Square**	**F**	**Sig.**
Corrected Model	7358.872	2	3679.436	152.072	.000
Intercept	10730.242	1	10730.242	443.483	.000
Pretest	361.798	1	361.798	14.953	.000
Method	6775.821	1	6775.821	280.046	.000
Error	9436.202	390	24.195		
Total	447681.000	393			
Corrected Total	16795.074	392			

a. R Squared=.438(Adjusted R Squared=.435)

Data in Table 4 showed that F(1,390)=280.05, P<.000.This leads to the rejection of the null hypothesis and the acceptance of the alternative hypothesis. This means that there is a significant (P<0.05) difference between the mean achievement scores of students taught Social Studies using Kolb's model of reflective thinking and those taught using Gibb's model of reflective thinking in favour of Kolb's model of reflective thinking.

HO_2: There is no significant difference in the mean achievement scores of male and female students taught Social Studies using Kolb's and Gibb's models of reflective thinking.

Table 5: summary of Analysis of Covariance on the significant difference in the Mean Achievement Scores of Male and Female Students taught Social Studies using Kolb's and Gibb's models of reflective thinking

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	7363.926a	4	840.982	75.738	.000
Intercept	10370.965	1	10370.965	426.664	.000
Pretest	330.313	1	330.313	13.589	.000
Method	6773.573	1	6773.573	278.667	.000
Gender	2.882	1	2.882	119	.731
Gender	1.931	1	1.931	.079	.778
Error	9431.148	388	24.307		
Total	447681.000	393			
Corrected Total	16795.074	392			

a. R Squared=.438 (Adjusted R Squared=.433)

Table 5 showed that F(1,388) =0.08, P>0.79. Therefore the null hypothesis which stated that there is no significant difference in the mean achievement scores of male and female students taught Social Studies using Kolb's and Gibb's models of reflective thinking was accepted.

HO_3: There is no significant interaction effects of gender, Kolb's ad Gibb's models of Reflective thinking and mean achievement scores of students in Social Studies.

From Table 5, the F-calculated 0.08 under method and gender is not significant at 0.78 which is greater than 0.05 level of significance (P>0). The null hypothesis which stated that there is no interaction effect of Kolb's model and Gibb's model of reflective thinking and gender on students' achievement in Social Studies was not rejected.

Discussion of Findings

The study investigated the effects of two models of reflective thinking via: Kolb's Experiential Learning Model and Gibbs' Reflective Cycle on junior secondary school students' achievement in Social Studies, with particular attention to gender differences and model-gender interaction effects. The study revealed that students taught Social Studies using Kolb's model of reflective thinking achieved significantly higher mean scores (M = 37.09, SD = 0.99) compared to those taught using Gibbs' model (M = 28.64, SD = 5.01). This suggests that Kolb's model is more effective in enhancing students' academic performance in Social Studies. Kolb's experiential learning cycle, which comprises four stages-concrete experience, reflective observation, abstract conceptualization, and active experimentation provides a structured yet flexible approach that allows learners to connect theory to real-life experiences (Kolb, 1984). This deep level of engagement likely contributes to improved understanding and retention of Social Studies content. This finding is consistent with the views of Okoro and Njoku (2022), who found that Kolb's model significantly enhanced Civic Education students' academic performance due to its emphasis on active learner participation. Similarly, Alhassan and Lawal (2021) observed that experiential learning strategies lead to better learning outcomes, particularly in subjects that demand critical thinking and real-world application. In contrast, Gibbs' model, which focuses more on reflective writing and emotional introspection, may be better suited to vocational or health-related education contexts rather than core academic subjects like Social Studies (Gibbs, 1988).

The study also showed that male and female students taught using either Kolb's or Gibbs' reflective model had almost the same mean achievement scores. This indicates that gender did not play a significant role in the academic performance of students exposed to either model. This outcome corroborates the findings of Umar and Adeyemi (2020), who reported no significant gender differences in achievement when reflective and participatory teaching methods were applied in Civic and Social Studies. Similarly, Nwosu and Chinedu (2023) concluded that modern instructional strategies that promote learner engagement tend to neutralize gender-based performance disparities in the classroom. These findings suggest that both reflective models are gender-inclusive and equitable, giving male and female students equal opportunities to learn and perform. This aligns with educational goals of promoting fairness, equity, and inclusion in teaching and learning processes.

The study further revealed that there was no statistically significant interaction effect between reflective thinking model (Kolb or Gibbs) and gender on students' achievement in Social Studies (P > 0.05). This means that the influence of the instructional model on achievement was not dependent on the gender of the students. In practical terms, both male and female students responded similarly to either model, and the effectiveness of the reflective thinking strategy used did not vary by gender. This result reinforces earlier studies by Chukwuemeka and Eze (2021), who found that the interaction between instructional method and gender was not significant in determining learning outcomes in junior secondary schools. The implication is that instructional methods grounded in reflection and experiential learning can be universally applied across gender groups without bias or inequality in their impact.

Curriculum Implication of the Finding

The findings of this study have important curriculum implications for the teaching of Social Studies at the junior secondary school level. The superior performance of students taught using Kolb's model of reflective thinking suggests that curriculum planners should incorporate experiential and active learning strategies into Social Studies instructional frameworks. This approach engages students more deeply and improves academic achievement. Additionally, the absence of significant gender differences in achievement across both Kolb's and Gibbs' models indicates that these reflective models are gender-inclusive, supporting the adoption of teaching methods that promote equity and equal learning opportunities for all students. Curriculum developers should therefore revise existing Social Studies curricula to integrate structured reflective thinking activities that align with Kolb's experiential learning cycle, thereby fostering critical thinking, real-world application, and inclusive pedagogy in classroom practice.

Conclusion

This study showed that Kolb's model of reflective thinking is more effective than Gibbs' model in improving students' achievement in Social Studies. Both male and female students benefited equally from the use of either model, and there was no significant interaction between teaching model and gender. This study therefore concluded that using reflective thinking approaches, especially Kolb's model, can enhance learning outcomes in Social Studies classrooms in a gender-inclusive way.

Recommendations

The following recommendations were made based on the findings of the study:

1. Teachers should adopt Kolb's experiential learning model in the teaching of Social Studies to enhance students' academic achievement through active, reflective, and hands-on learning experiences.
2. Curriculum planners and policymakers should integrate structured reflective thinking strategies, particularly Kolb's learning cycle, into the junior secondary Social Studies curriculum to promote deeper understanding and application of concepts.
3. Teacher training programmes should include modules on reflective teaching models to equip educators with the skills needed to apply both Kolb's and Gibbs' reflective strategies effectively, regardless of student gender or background.

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