CHAPTER ONE

INTRODUCTION

Background to the study

Education is known as the foundation of the society, its primary and ultimate aim is to develop each child to efficiently participate in the society. Secondary education is an important stage in the hierarchy of Nigeria education, it is the middle amid the primary and tertiary schooling stages. Nanbak, (2020) explained this stage to be a potential ground for the development of future experts as well as the foundation for professional fields discovering and classification. Nigeria is known to have some specific objectives for its secondary school education and they include: The provision of smooth opportunities for primary school leavers to further acquire higher quality education regardless of their sex, religion, ethnic and social backgrounds; to broaden its curriculum to accommodate variety of endowments that are concealed in the students so as to bring them to light in a productive way; to provide the students with the relevant scientific and technical knowledge to effectively survive in the contemporary age; to foster national unity with highlight on the common ties that bring us together in our diversity; to inspire students with a high aspiration for attainment and self-improvement both at school and in later life; to raise a generation of people who are self-dependent and can think for themselves as well as respect the worldviews of others and to inspire a deep sense of appreciation of the dignity of labour among citizens as well as create a great sense of national consciousness (Nanbak, 2020).

These objectives intended for secondary schools can be said to be fully achieved if students after going through this educational level possess attributes such as problem solving skills, foundational knowledge and skills and this is only possible if learning was achieved but most often

we find out that students are without such skills leaving us doubting the efficacy of the education acquired at this level.

Learning can be said to be the ability to make sense or abstract meaning, connecting parts of the subject matter to each other and to the real world, interpreting and understanding reality and comprehending the world by reinterpreting knowledge. Learning is also often explained as a measurable surge in knowledge, memorizing of skills, methods and facts that can be imbibed and used as necessary. Therefore a student can be said to have learnt if he has acquired knowledge and skills from his education experience which he can apply in improving his immediate society. It is of great necessity therefore to ensure that the education process is effective enough to produce products that reflects the intended goals. That is why educational research seeks to provide answers to an important question in education "Which is how do children learn". This is because when we can identify how they process and retain information, we can adopt approaches that increases teaching effectiveness thereby increasing the chances of students learning. This research has led to the inculcation of the 21st century approaches into our education policies and system, they are generally referred to as student centered approaches of teaching.

Although there is the intention to create and implement a more student-centered learning system; there has been failure to put this into practice in our classrooms especially in public schools, as the classrooms are still mostly controlled by 'chalk and talk' approach of teaching (Nwosu, 2015); Here the teacher stands to give a kind of discourse in which the child has no option but to accept every bit of information given by the teacher and in most cases battle to commit it to memory in the way and manner it is presented. It usually seems like the students are passive and do little or nothing to build meaning in their learning while the teacher is seen as the supplier of knowledge.

Active Learning is any instructional approach that involves students in the process of learning. It requires that students do significant learning activities and think through what they're carrying out. Although this explanation can consist of seemingly outdated tasks like homework, while implementing active learning denotes to activities (demonstration, group working) that are engaged in the classroom, active learning therefore primarily refers to the level of engagement by the student in the instructional process. An active learning environment involves students and teachers undertaking a dynamic partnership in which they share the responsibility for instruction. This approach to teaching is purely student-centered as the students are guided to discover facts and construct their own idea and understanding of the concepts of study. Physics is considered to be the basic subject among the entire sciences disciplines (Aina & Olanipekun, 2014), the subject equips students with rational thinking skills and presents the theories required for grasping the methods of exactly how things work. A society with high level of technology can be considered as being developed and physics education is a major factor in enhancing technology development because of its importance in addressing the facts including the interaction of matter and energy. Engineering and technology, has their foundation built on physics, all man-made physical materials are designed with the understanding gotten from the basic principles involved in physics. Many pleasurable products ranging from automobiles and information and communications equipment to improved health system have their roots in ground-breaking discoveries made in the field of science which physics is one of the bedrock subjects. However, students are faced with different challenges in learning physics often leading to failure to acquire intended knowledge base/skills and poor performance at secondary school level. The use of active learning to learning physics will help curb these challenges but some factors hinder the use of active learning approach

in learning physics some identified are class size, readiness of learner to learn, availability of instructional materials, and utilization of instructional materials.

Class size is almost an administrative decision over which teachers have little or no control. We have large and small sizes in school, the chances are higher that a teacher will spend more time with individual students when the class is smaller. A large class is most likely to discourage a teacher from applying active learning approach while teaching as active learning requires time and attention giving, he needs to be able to pay attention to the students as he plays the role of a facilitator and this will be tiring for him given the population size.

Readiness of learners to learn may also influence the use of active learning approach as students are already familiar with the teacher centered approach usually see the fundamentals of learning and the division of tasks between teachers and students in fixed view; their role being copying ideas and information out of books and the head of teachers into their own heads while they see their teachers as the person responsible for structuring instructional objectives, presentations and assignments. Such perspective thereby influences the use of active learning in the classroom because even if the teachers are ready to implement the students are not ready to engage in the instructional process.

Availability of instructional materials can also influence the use active learning approach in a class room as instructional materials are materials that helps simplify teaching when used by a teacher. These could be visual, audio-visual or audio aids and they are either concrete or non-concrete. These instructional stimulates the students to learn, thereby bringing life to learning. Learning occurs best when different senses are involved and not just hearing. Using instructional materials in the classroom aids the teacher in explaining new concepts clearly which helps the student to grasp the concepts being taught easily. However, they are

not ends in themselves but they are means to an end, their importance is based majorly on the fact that they help the teacher avoid rote learning a regular part of teacher centered approach of teaching, absence of these materials may leave the teacher with no option than to depend on oral communication and thereby engaging just the hearing sense.

Utilization of instructional materials is of major impact to the use of active learning approach in that the presence or availability of these materials is not just enough for active learning to take place, when these items are not used properly they become more of a nuisance than an advantage. Physics teachers should be trained on the proper way to use instructional materials and on how to engage students with this materials to help them use it efficiently and effectively while teaching.

Statement of the Problem

Physics is one of the core science subjects and the knowledge of this subject equips students with fundamental principles for innovation in technology. However studies overtime has shown a consistent poor performance of students in Physics especially in the West African Senior School Certificate Examination, this has led to questioning the instructional method used during physics lessons. The teacher centered method of instruction has proven ineffective therefore the student centered method has been greatly advocated for and active learning approach is an effective student centered method. The use of active learning approach can help in improving students' performance as it involves hands on learning that ensures the students think through what they are doing but it has been observed that factors like large class size, shortage of lesson time, leadership approaches, shareholder involvement, funding methods, teacher's perception and knowledge could limit the use of this approach.

This study therefore is conducted to assess the extent to which class size, readiness of learner to learn, availability of instructional materials and utilization of instructional materials, could influence the use of active learning approach in learning of Physics in Public Senior Secondary Schools in Oredo Local Government area of Edo state

Purpose of the Study

The study aims to investigate the factors influencing active learning approach in teaching and learning of physics in public senior secondary schools in Oredo Local Government of Edo state. Specifically the study seeks to examine:

1. The extent to which class size influence the use of active learning approach in learning of physics.
2. The extent to which the readiness of learners towards learning influence the use of active learning approach in learning of Physics.
3. The extent to which the availability of instructional materials influence the use of active learning approach in learning of Physics.
4. The extent to which the utilization of instructional materials influence the use of active learning approach in learning of Physics.

Research Questions

The following research questions were raised to guide this study:

1. To what extent does class size influence the use of active learning approach in learning of physics?
2. To what extent does readiness of learners towards learning influence the use of active learning approach in learning of Physics?

3. To what extent does availability of instructional materials influence the use of active learning approach in learning of physics?
4. To what extent does the utilization of instructional materials influence the use of active learning approach in learning of physics?

Hypotheses

The following null hypotheses were proposed and will be tested at 0.05 level of significance.

1. Class size does not significantly influence the use of active learning approach in learning of physics.
2. Readiness of learners towards learning does not significantly influence the use of active learning approach in learning of physics.
3. Availability of instructional materials does not significantly influence the use of active learning approach in learning of physics.
4. Utilization of instructional materials does not significantly influence the use of active learning approach in learning of physics.

Significance of the Study

The findings of this study will be of benefit to students, teachers, curriculum planners, researchers and ministry of education

The findings of this study will be of benefit to students, as it will help create an awareness on the importance of experimental learning during classes and how their willingness to adapt this

approach will greatly improve their quality of education. It will also be of significance to teachers as it would help create awareness of active learning approach and its benefits during lessons.

Curriculum planners will benefit from the findings of this study as it would provide a broader scope which involves active learning approach, this can encourage them to draw curricula with hands on activities inclusive for senior secondary schools.

The findings of the study will also provide information for subsequent future research as more researchers may seek to validate its result, while others may seek to replicate it by using the scope, concept as well as its logical approaches.

The findings will also be of benefit to the ministry of education as it will help them evaluate their current system of drawing out lesson plans for teachers in public schools. It will help them access the weak areas of this current strategy.

Scope of the Study

The study covers some factors influencing the use of active learning approach in learning physics in secondary school. The study is limited to Public Senior Secondary Schools in Oredo Local Government Area of Edo state.

Definition of Terms

Active Learning Approach: Active learning is an approach to instruction that engages the students with the course material through discussions, problem solving and other approach. The learner has more responsibility during lessons than in passive approaches such as lectures but the instructors' guidance is still important.

Class Size: Class size is an educational tool used to define the average number of students per teacher or class in a school. It can also be said to be the number of students to a teacher in a classroom, in Nigeria the recommended number of students is 30-40 per class.

Readiness of learner towards learning: Learning readiness is the degree of concentration and eagerness to learn among students.

CHAPTER TWO

LITERATURE REVIEW

This chapter deals with the review of related literature. The literature review were discussed under the following sub-headings: Conceptual Framework, Theoretical Framework, Review of Related Empirical Studies and Summary of Literature Review.

Conceptual Framework

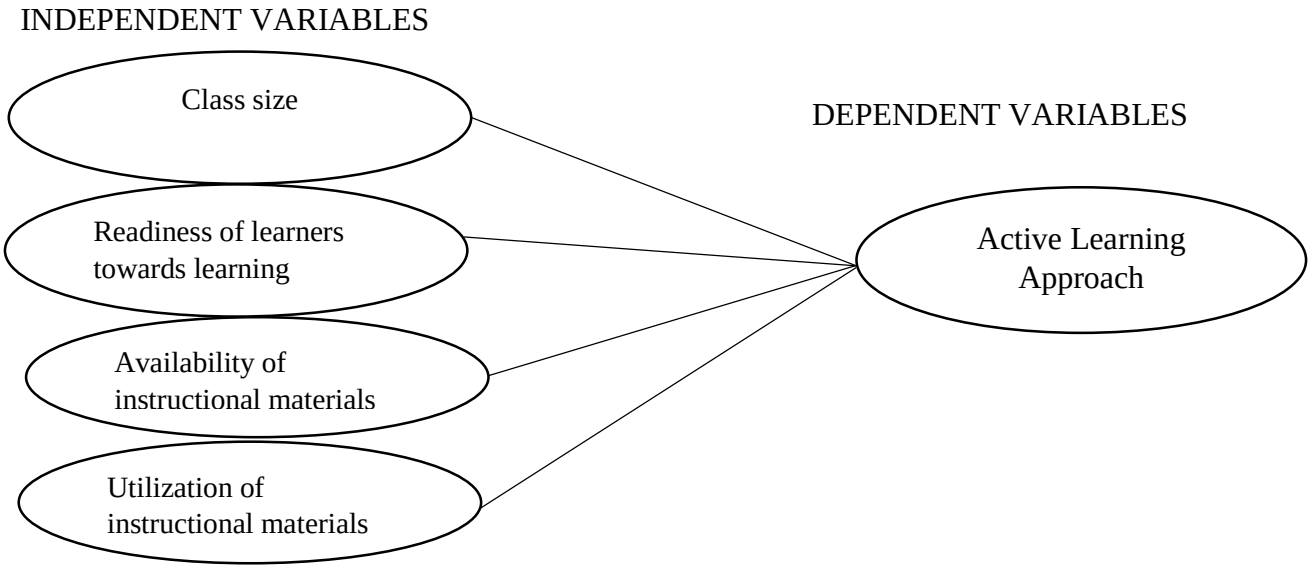


Figure 1: Conceptual Framework

Source: Developed by the Researcher

The researcher developed a conceptual model (see fig 1 above) to describe the variables which are focused on in this study. Class size, readiness of learner to learn, availability of instructional materials and utilization of instructional materials are the independent variables in the study, which will be observed to note their level of relationship with the dependent variable active learning approach which is an important approach to instruction that can aid the achievement of educational goals and objectives.

Class Size

Class size is a concept in educational research defined as the average number of students per class, calculated by dividing the number of students enrolled by the number of classes. The number of students per teacher in a given class is also known as class size (Ajayi, Audu, & Ajayi. 2017). It was explained by Adeyemi (2008) as a tool for education that may be used to describe the average number of students per class in a school. In Nigeria the recommended number of students is 30 or 40 per classroom, the class size we find in our public secondary schools is significantly higher than what is advised. Research showed in Oyo State that average class size can affect how students learn and even determine the amount of material covered during a class period (Martins, Peter, & Isaiah, 2007) in an instance where a large class is with a lot of noise, this may mean less time for the teacher to cover academic tasks slated for the day. The teacher may also be discouraged from assigning group work, which is an effective active learning strategy, because there are simply too many groups to manage. While a small class, could Promote increased teacher-student communications, which has proved to enhance the performance of students (Leyva, Weiland, Barata, Yoshikawa, Snow, Treviño, and Rolla, 2015). Numerous researchers have established the strong connection between class size and students' academic performance. Class size is seen as a tool for measuring the performance of educational system.

Readiness of learner towards learning

Dangol & Shrestha (2019) defined Learning readiness as the degree of concentration and eagerness to learn among students. Learner readiness is also said to be the capability of a learner to attain knowledge and initiate change in behavior leading to effective and positive learning outcomes. It is the ability to participate actively in the process of learning, learner readiness is that individual state of student when the individual is physically, mentally and emotionally ready to

learn. Thorndike said in his law of readiness which is the first primary law of learning stating that learning takes place when an action trend is stirred up through initial modification, deposit or attitude Gandhi (2010). In other words learner readiness implies a level of particular mindedness and excitement to do something (Hayden, 2008). Learning is more effective when an individual is ready to do an act of learning intrinsically but when not ready to learn the efforts done by they and others will be futile.

Better educational performance can be achieved when the students are ready to learn (Deyo, Huynh, Rochester, Sturpe, & Kiser, 2011). Otherwise all efforts to provide quality education in school becomes futile. When the student is prepared to learn, he learns rapidly and when the student is not geared up to learn, he cannot learn successfully (Prakash, 2012). Without learning readiness, educational achievement of students is decreased, efficiency and effectiveness of classroom teaching is limited also as no matter the strategy the teacher intends to apply the student are not interested or prepared to engage in the lesson. Lack of learners' readiness also leads to wastage of government investment in education.

Availability of instructional materials

Instructional materials are vital and important tools required for teaching and learning in schools to promote teachers efficiency and increase students' performance, (Abdu-Raheem, 2016). In other words the learners are able to internalize more knowledge, when more of the learner's senses are stimulated other than hearing alone. Natoli (2011) believed that instructional materials are significant to all practices of learning and all stages of education, including formal and informal education. Instructional Materials are generally acknowledged and accepted as important supplement for productive teaching and learning as they contribute much to teaching and learning process by enabling emphasis, time management, stimulating of students' interest, providing

valuable information and expanding the horizon of experiences. Instructional materials can be distributed into primary categories, which are, audio, visual, audio-visual and ICT (Information and Communication Technology). Materials for audio instruction are materials that appeals to the auditory perceptions like audio tapes, radio, VCDs, DVDs and others, (Makinde, 2014). The instructional materials that appeals to the visual sense can manifest as images, prints, or actual objects (models) and others are known as visual instructional materials. Audio-visuals combine the hearing and visual senses to appeal to the learner and improve interest such materials take the form of films, television, audio-visual tapes and CDs. Aina (2013) listed out some common instructional materials that are needed for learning of physics and the list included Audio tape, Charts, Computer set, Projectors, Printed materials, Physics laboratory, Radio; He further listed some common apparatus that should be in a physics laboratory for electricity & magnetism; Resistance box, rheostat, galvanometer, ammeter & voltmeter, compass needle, resistor, volt accumulator, magnet. For light and waves; Lens, rectangular block, microscope, ray box, turning fork. For mechanics; Spring balance, spiral spring, pendulum bob, weights, meter rule, measuring cylinder, stop watch, micrometer screw gauge, vernier caliper. For Heat; Thermometer, bunsen burner, calorimeter, measuring flask.

In selecting instructional materials, it is essential to put into consideration the age and ability level of students, goals of the lesson as well as active learning strategy the teacher intends to apply. Absence of instructional materials while learning can cause inattention and poor learning which causes set objectives of the lesson not to be achieved; poor connection with preceding or subsequent lessons will also be a challenge.

Utilization of instructional materials

Instructional materials are proven useful tools hence when applied effectively by a teacher help to enrich his teaching and motivate his student to learn, (Adegoke, 2010). The teacher needs to be skilled to be able to effectively utilize the instructional materials, teachers should be skilled in how to use and control instructional materials, intelligent management of these materials in classroom is necessary. Millous (2010), described how unless the classroom teacher uses these devices and directs the pupils attention to what they should look for, the pupils will not learn as much as intended form the devices.

As rewarding as instructional materials has been proven to be in achieving learning objectives in Physics, it is often the norm that their use is absent in different physics classes in public schools and this has been attributed to different reasons such lack of adequate materials, lack of skills of teachers, laziness amongst the teachers, Time constraint, lack of support from administration.

Therefore apart from being available and adequate, instructional materials should also be used suitably. Instructional materials are not entirely self-teaching; they demand that a teacher leads the way for learning to occur since the materials for instruction are not superior to the teachers who use them. So it is necessary that the lesson is planned alongside the active learning strategy and instructional material that will help in achieving the lesson objective; the focus of the lesson should not just be on covering work scheme but on the students actually learning.

Active Learning Approach

Active learning is any activity that involves students doing and reflecting on what they are doing. Put another way, in order for learning to be active, students must do something and then think through what they are doing. Active learning comprises any kind of technique that engages

the learners in the learning process and makes them responsible for their own learning (Yoder & Hochevar, 2005).

In active learning process, students move from passive to active recipients of knowledge in these activities that involve analysis, synthesis and evaluation besides developing skills, values and attitudes. Active learning is not only about the advance of students' skills but also their investigation of their own attitudes and values (Sivan, Leung, Woon & Kember, 2000). Active learning denotes activities (demonstration, group working etc.) that are incorporated during lessons (Prince M., 2004). The conventional approach of homework is not recognized as active learning as all learning are in some sense active, but active learning refers to the level of engagement by the student in the instructional process. An active learning environment entails that students and teachers undertake an energetic partnership in which they share the responsibility for instruction.

Active learning approaches are attributed with improving conceptual understanding of the students in numerous disciplines, such as Physics. Research has proven that progress arises from the intensely contextualized approach of education that active learning brings, its focus is on the interdependence of situation and cognition. Learners tend to see knowledge as an instrument for dynamic use in problem solving; when context and learning are combined, eventually they cultivate vital transversal abilities instead of knowledge being the outcome of education.

Akinboola & Afolabi (2010) have argued that there are three connected components to active learning. These factors are (i) Basic elements (ii) Learning strategies and (iii) teaching resources. The basic elements are made up of speaking, listening, reading, writing and reflecting while the elements involve cognitive activities that allow students to clarify the question, consolidate and appropriate the new knowledge. The second factor of learning is the learning strategies that incorporate the above five elements. These are small groups, cooperative work, case

studies simulation, discussion problems solving and journal writing. The third factor involved in active learning is teaching resources that the teacher employs in encouraging the students to interact and participate actively during the activities.

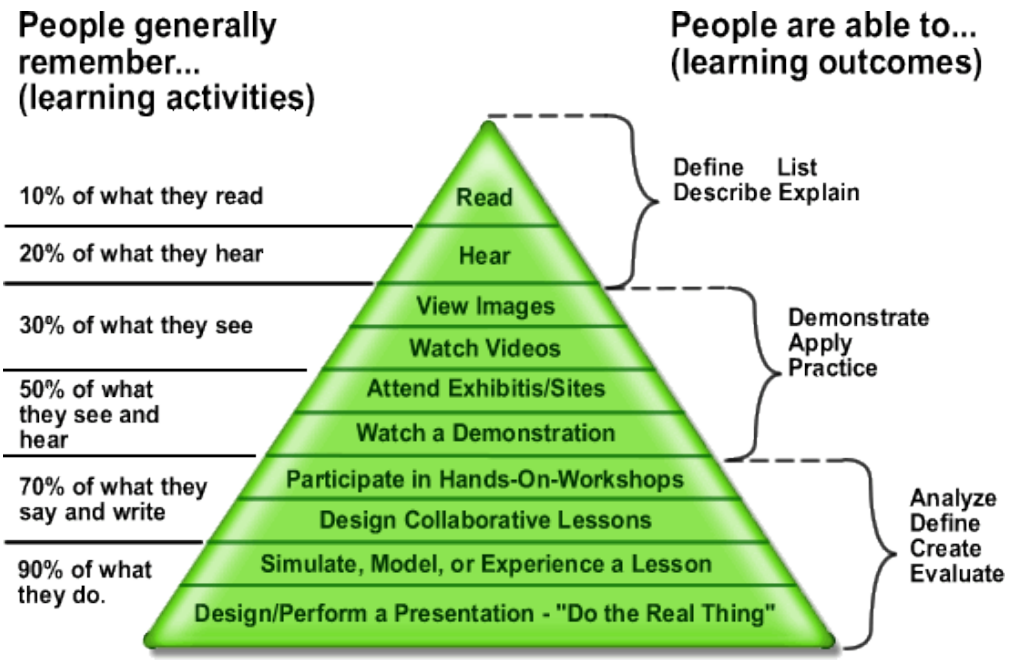


Fig 2: Learning Pyramid

Source: Satu Öystilä, (2015)

Fundamentals of Active Learning

According to Ha chi (2007), there are three fundamentals of active learning which are:

Communication and Listening

When students engage in discussion on a topic, either in responding to a question by the teacher or in clarifying a point to different student, they strengthen and organize what they've learned. While listening, it is necessary to guarantee meaningful listening, that is the students can relate what they are hearing to what they know already. When a teacher is giving explanations

during a class, students needs a break period from just listening passively in order to assimilate what they've heard. Having a reason other getting a good grade will be helpful as they listen. Other practical use of this elements can be the teacher asking an intriguing question during the entry behavior that prompted enough thought in the students to look out the solution in the words that follow. Also informing the student ahead of the class that they're going to be responsible for explaining to another student in the next class.

Writing

Students are able to process in fresh details in their own words through writing. It is mostly efficient in big classrooms where there are restrictions on assigning students to groups or pairs. Students who favor independent learning also find it appealing.

Reading

Although students achieve much gaining knowledge from reading, but they rarely receive instruction on how to read efficiently. Summary and note checks are active learning exercises that can assist students in understanding what they have read and also help in developing the capacity to concentrate on vital information.

Reflecting

In the teacher centered approach, the teacher only halts in talking at the period and students are made to move into their next class without much time to process the information received from the previous class. It can almost be said that the newly acquired knowledge evaporates from their brains as they have no time to process and connect what they just learned with prior knowledge

they possess, or to think of ways to implement the knowledge they gained in any way. Creating room for students to pause and think, to engage their new knowledge by teaching one other, or to provide answers to the day's topics, these are some of the easiest strategies to boost retention.

Some Active Learning Strategies Applied In Teaching And Learning Physics.

Group Discussion

Group discussion is an active learning strategy that can be applied in teaching and learning of physics. Discussions can be conducted with any class size but it is typically more effective in smaller group settings and environment and allows for instructor guidance of the learning experience. This strategy requires the learners to think critically on the subject matter and use logic to evaluate their and other's positions. Students are supposed to engage in thoughtful and productive discussion of the content; this is a good strategy if students have been given time to read and cover up on the topic beforehand.

Using conversation as a teaching tool has several advantages, including fostering students' exploration of a variety of viewpoints and enhancing their intellectual acuity, it show respect for students' voices and experiences, it aids in the development of synthesis and integration abilities in pupils. Additionally, by interacting with the students in an active manner, the instructor helps the students be more prepared and aware of what is going on in the classroom. (Atsuwe & Friday, 2016).

Experiment in the Laboratory

A lot of practical activities are required in Physics as a science. Supporting theoretical explanations with actual practices in the laboratory has been observed to be the most important feature of effective physics teaching (Isaac, Daniel & Olusola, 2014). Therefore, the teaching and learning of physics in secondary schools should help the students develop essential scientific skills and the process should also be capable of infusing into them creative mind enhance their technological applications. It is necessary that adequate laboratory facilities required be provided for effective teaching and learning of practical physics (Adedayo & Owolabi, 2014). Student are able to develop manipulative skills necessary for inventions from the use of laboratory while teaching them sciences (Uhumuavbi & Okodugha, 2014). The students ought to be engaged in this process at the beginning of the subject that is usually year 1 of senior secondary school as it leads to better retention of information and also the development of favorable attitudes towards school subjects.

Laboratories use should not be seen as only important when preparing the students for external exams as students during the use of laboratory are active participants who acquire more knowledge by performing experiments. This method of teaching Physics makes the students become conversant with mental processes such as, inferring, observing, measuring, classifying, and data interpretation. Learning therefore becomes engaging because concrete materials are in use during lessons. When laboratory is not in place or not stocked with the needed apparatus, the science teacher will not have materials to teach and guide the students. Lack of proper utilization of laboratory apparatus and equipment was proven to be responsible for students' poor performance (Danjuma & Adeleye, 2015). Isaac et al. (2014) in his study revealed that a significant

difference existed in the academic attainment in physics of low performing students exposed to laboratory-based instructional intervention and those exposed to traditional teaching method.

Collaborative Learning

In Collaborative learning two or more persons learn or make effort to learn something Dillenbourg (1999). Collaborative learning is centered on the ideal that information can be produced when members within a population interact actively by sharing of experiences and taking on roles (Mitnik, Recabarren, Nussbaum & Soto, 2009). The methods and settings where students work together on a same project where each student is reliant upon and responsible to another is known as collaborative learning. This strategy includes a group of learners who work together to solve a challenge, create a product or complete a task. Applying this approach in learning requires students to be active participants in the teaching learning processes in which they assimilate information and relate the new knowledge to their cognitive structure for future utilization and subsequent task. Students identify a problem, and the gap that exists between the identified problem and the solution to give a clear direction of the problem solving process.

Theoritical Framework

Kolb's Experimental Learning Theory

The theory the researcher used in supporting this study is experiential learning theory. This theory was postulated by David Kolb and he defined experiential learning theory as "the process whereby knowledge is created through the transformation of experience. Experience must be grasped and transformed in order to gain knowledge (Kolb, 1984). Experiential learning theory is

based on the findings of some scholars in 20th century who made experience a central part particularly those of Kurt Lewin, Jean Piaget, William James, Carl Jung, Paulo Freire, Carl Rogers and John Dewey—in their theories of human learning and development— to create a multilinear adult development model and a holistic picture of the experience learning process (Kolb, 1984). As discussed by (Kolb & David, 2005), the theory is based on six assertions that these researchers agree upon.

1. The best explanation for learning is that it is a process, not an outcome. Education in schools can be improved by engaging students in a process that best improves their learning—this process involves feedback on the effectiveness of their learning efforts. As Dewey notes, "Education's process and objective are the same: education must be seen as a continuous reconstruction of experience" (Dewey, 1897).
2. Learning is a complete process of adaptation to the world. Learning includes integrated functioning of the entire individual, not merely the outcome of cognition— feeling, thinking, behaving and perceiving.
3. It is important in learning that the conflicts among dialectically incompatible ways of adjusting to the world, be brought to a resolution. The learning process is driven by differences, disagreement and conflict are the main forces behind learning. In the learning process one is required to travel alternately between opposing ways of feelings and thinking, as well as reflecting and acting.
4. Mostly, learning is relearning. Learning is best aided by the process that brings out the students' ideas and prior knowledge about a topic such that they are capable of observing, verifying and incorporating new and more refined ideas.

5. Learning happens due to transactions that are synergetic between an individual and their surroundings. According to Piaget, learning happens when the dialectic processes of accommodating new information into preexisting conceptions and adapting preexisting concepts to new experiences become balanced.
6. The process of creating knowledge is known as learning. Experiential learning theory recommends a constructivist approach to learning in which the learner's own knowledge creates and recreates social knowledge. This stands in distinction to the model of transmission on which prior established notions are transferred to the learner as the foundation of educational activity.

Kolb's Learning Cycle

The experiential learning theory of Kolb is generally characterized through a four-phase learning process where the student passes through all the stages. As stated by Kolb and Kolb (2017), the most important aspect of the learning cycle is that the learning process is describes as a reoccurrence circle or spiral as opposed to the linear, traditional information transmission model of learning used in most education, information is conveyed from the teacher to the learner to be deposited in the declarative memory for recall later. The learner is a passive recipient of information in the linear model. Learners do not have any direct contact with the subject at hand, they actually are unable to judge, investigate and explore for themselves. They are rendered powerless in the relationship with the choice of only "taking the teacher's word for it." Teachers, in their own part, are left to engage in a one-way interaction that is ultimately dulling and uninteresting.

KEYS:

CE_ Concrete experience,

RO_ Reflective observations,

AC_ Abstract conceptualization,

AE_ Active experimentation

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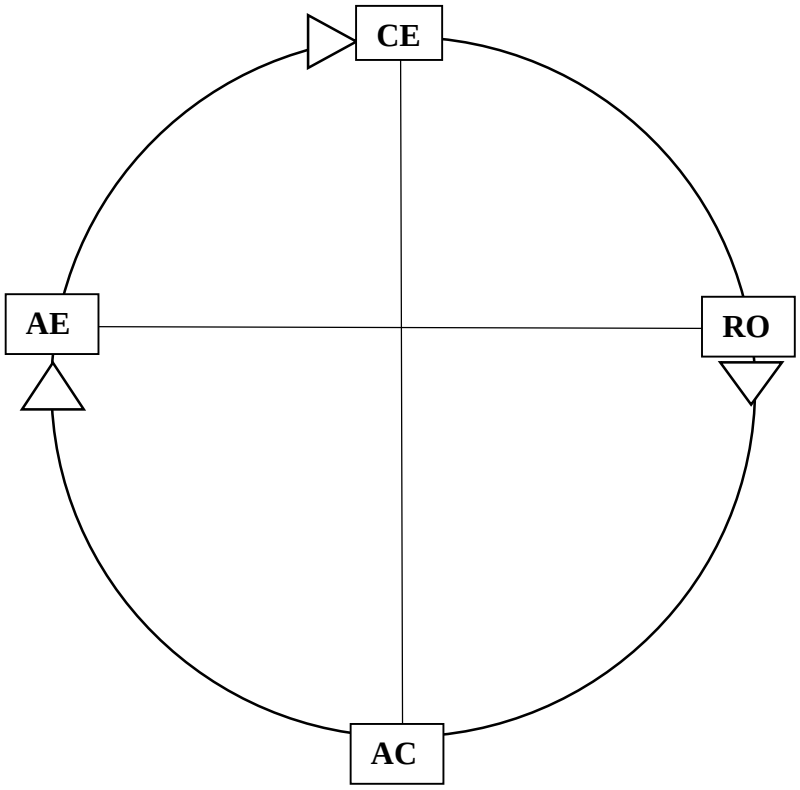


Figure 2 –Kolb's experimental learning cycle

Source: Developed by the Researcher

Figure 3 above shows the cyclic representation of the continuous movement of the four stages of Kolb's experiential learning. The cycle begins with concrete experience (CE); according to Lewis and Williams (1994), when learners encounter challenges that disrupt their understanding or application of a concrete experience, "they reflect on the experiences from a variety of perspectives" that process is known as reflective observation (RO). Then they are guided to abstracted conceptualizations (AC) by the reflective observations, which Kolb and Kolb (2016) describe as the process through which "reflections are adapted and broken down into abstract concepts from which new inferences for action can be drawn" Goldstein (2001) noted, that in this

phase concepts or theories grasped by the intellect along, in this stage, are integrated into the learners' mind. They are not imprinted like photocopies, but are given their special form by the individual's cognitive style, talents, or intelligence, life experiences, and world view". The process of the concepts becoming more concrete in the learners' mind, the learner is guided toward opportunities where learners synthesize concepts into continual practice through active experimentation (AE) until those actions achieve the level of normalized or concrete experience. At this point, the learning cycle begins again.

Experiential learning permits students to use the skills and knowledge they have acquired in a real-world setting, which can be more meaningful and memorable than simply reading or listening to lectures. It also encourages critical thinking and problem-solving skills. As learners are exposed to different scenarios and environments, they are encouraged to think creatively and develop solutions to problems. Learners are encouraged to take risk taking and this helps them be open to new ideas, which can be beneficial in their future academic and professional pursuits. Collaborating to find solutions, helps the learner develop better communication and collaboration skills. In this learning type the learners can also develop better team-building skills, which can be beneficial in the workplace.

Experiential learning is also very beneficial to the learners, as it helps them develop better self-awareness and self-esteem. As learners become more involved during the learning process, they are able to gain enhanced comprehension of their own strengths and weaknesses.

Social Learning Theory

Social learning theory is a theory of learning and social behavior and it proposes that humans learn by watching the behaviors of others and the rewards or punishment associated with

those behaviors (vicarious reinforcement).This theory involves observing the behaviors of others and the rewards and punishments that result from those behaviors

Albert Bandura and colleagues conducted a study to explain social learning theory (Bandura, Ross, & Ross, 1961). The experiment involved children who were shown a film where adults interacted aggressively (hitting, punching, and kicking), with an inflatable toy known as a Bobo doll. These children were put into four different groups: Group 1 watched the version where the adult were rewarded for the aggressive behavior. Group 2 watched the version where the adult were punished for the aggressive behavior. Group 3 watched the version where the adult did not receive any consequence for the aggressive behavior. Group 4 was the control group they were not exposed to any of the films. After watching the film the findings revealed that, there was a higher probability for the children who watched the adult rewarded for aggressive behavior (Group 1) to behave aggressively when compared to the other groups. While there was a lesser probability for the children who observed the adult be punished for aggressive behavior (Group 2) to behave aggressively when compared to the other groups. This study validates the behaviors that children put on in the future are strongly influenced by observing (i) the adults behavior around them and (ii) The consequence of this behaviors.

Social learning theory incorporated cognitive and behavioral theories of learning to provide a comprehensive model that could provide explanation for a wide range of learning experiences that occur in real world. The key tenets as outlined by (Bandura 1977) are as follows:

1. Learning is not only behavioral; rather, it involves *cognitive* process and this takes place in a social context.

2. Learning may happen when a behavior and its consequences are observed (vicarious reinforcement).
3. In learning the bystander, observes, makes extraction of information and makes decisions about the performance of the behavior (observational learning or modeling). Consequently, learning occurs without an observable change in behavior.
4. Reinforcement is not solely in charge of learning, but it plays a role in learning.
5. The learner is not merely a passive receiver of information. Environment, behavior and Cognition all mutually influence one other (reciprocal determinism).

Modeling is affective, cognitive, and behavioral modifications that occur as a result of examining one or more models. The three types of modeling are:

- Direct
- Symbolic
- synthetic

Direct modeling is when attempt is made to openly replicate another's behavior. For example, Bisi saw Kunle study and how he studied. She saw that he made A's in most of his exams. Bisi wants to be as outstanding and begins use Kunle's study pattern.

Symbolic modeling is mimicking the behaviors of characters in books, television, movies, or video games. This is usually common with adolescents and the several media they consume.

For example, Prince began communicating with people the way his favorite characters do in action movies.

Synthesized modeling involves taking little bits of character from different models. For example, Osaze was an intern teacher. He took concepts and modeled his teaching approach from a diversity of teachers that he observed during his years as a student.

The teacher is allowed by social learning theory to shape the classroom behavior of students by displaying proper behavior and rewarding students for good behavior visibly. It also encourages the teachers to incorporate collaborative learning during classes for students to practice and learn with diverse students (models). Students are known to pay more attention to their peers. Teachers are also given opportunity to integrate multimodal learning to help students retain new information (i.e., presenting new content through visual, auditory, kinesthetic modes).

Social learning theory allows for an environment where both student and teacher share instructional duty and this is known as an extension of guided participation leading to reciprocal learning. Also this theory gives room for teachers to promote self-efficacy in students by having them receive positive affirmations, watch others be successful, and experience success on themselves.

Empirical Review

Various scholar's work relating to the current investigation will be reviewed, so as to draw conclusions or inference on how and where the reviewed studies differ from the current investigation and also indicate areas of similarities with the present study. Ajayi, Audu and Ajayi (2017) in their study, 'The influence of class size on students' classroom discipline, engagement

and communication' studied 128 senior secondary schools out of a population of 4529 senior secondary teachers from Ekiti State. A descriptive survey research design was adopted. The instrument used for data collection had a reliability value of 0.78 using Cronbach Alpha. The research question was answered using mean rating and scores for standard deviation, Chi influence was used to test the null hypotheses on senior secondary classroom discipline, engagement and communication among others. The conclusion of their findings supported that Nigeria should adopt a student-teacher ratio of no more than 40:1 (small class sizes) for efficient communication, classroom discipline and engagement.

Blatchford, Bassett and Brown (2011) in their study 'examining the impact of class size on student participation and teacher-student interaction: Variations according to past achievement of the students and primary vs. secondary schools'. Systematic observations were employed as their survey type and it was carried out using 686 pupils in 49 schools. To observe the relationship between observation measures and class size to control for factors like pupil achievement, methods of multilevel regression were applied. At both levels primary and secondary, smaller class sizes allowed for more active learning and more individualized attention from teachers. In larger classrooms, classroom engagement decreases but, contrary to expectancy, this led to lower-achieving secondary students. Their research observation and conclusion was that low attaining pupils will benefit more from smaller classes in terms of encouraging participation in learning and providing more individualized attention.

In Ayeni and Olowe (2016) study which was focused on the "Effects of large Class Sizes on Business Education Teaching and Learning in tertiary institutions in Ekiti State". The study used survey design and the population was made up of thirty lecturers and randomly selected five hundred and twenty (520) final year students. Questionnaire was the instrument for gathering data

and the study's conclusions demonstrated that large class sizes had an adverse impact on efficient teaching and learning of business education in tertiary institutions. There was a low relationship between large class and effective teaching and learning. The authors' recommendation included that the management employ more lecturers for the teaching of Business Education in tertiary institutions so they can admit large number of students, also the institution ought to make extra effort to make available more facilities and resources to support efficient business teaching and learning.

Chimbi and Jita (2021), in their study Resurgence of Large Class Sizes and Pedagogical Reform in 21st Century Secondary School History Classrooms; examined the interaction between class size and teachers' selection of teaching methods while implementing a new history curriculum in Zimbabwean secondary schools. The study used a qualitative multiple-case study of four secondary school history teachers and the research approach used was grounded theory, The study generated theory from systematically obtained and comparatively analyzed data on how class size influenced four history teachers' classroom practice and fidelity to a new history curriculum they were implementing. The instrument used were document analysis protocol, semi-structured interview guides and lesson observation protocol. Axial coding was used for comparative analysis and coded data were extracted and analyzed using comparative content analysis, intra and cross-case analyses, triangulation, data crystallization and thematic aggregation. The findings confronted the conventional view that large classes compel teachers to use rote pedagogy and small classes encourages learner-centric approach. The finding showed that a teachers' choice of teaching methods was not connected to size of the class nor new pedagogical policy. Instead, teachers' personal philosophy to instruction appeared to be the vital factor to the

teaching methods they used, rather than the size of the class. They recommended that improving teacher quality will lead to pedagogical change.

Mebratu and Woldemariam (2018) in their study on “Perceptions and methods used by EFL teachers to include active learning into English classes: the example of three particular secondary schools in Dawro Zone, Southern Highlands Province, Ethiopia”. Active learning techniques and teachers' perspectives in EFL classrooms among the three secondary schools that were chosen was investigated. A survey design that was descriptive was used and an aggregate of 60 students of the high, medium, and lower achievers and 12 teachers took part in the research using the purposive sampling technique and availability. Data collection tools like interviews, questionnaires, and observation checklists was used in a mixed method approach. Frequency, percentage, mean, and grand mean were used to analyze the data, while theme analysis was used to examine the qualitative data. The study's conclusions showed that the majority of respondents have positive perspective towards active learning. Though their perceptions were good, their methods for engaging in active learning were low. The main influences affecting the use of active learning were inadequate teacher training, assigned sits in a large class, propensity of stressing the teacher-centered approach and the lack of time. Their final recommendation was that bodies responsible should readjust the conditions and enable inputs required for the execution.

In the study of Totoba (2021) titled “Factors Affecting the Implementation of Active Learning Methods in Bale Zone Secondary Schools: Exploring Perceptions, Knowledge and Experiences of Students, Teachers and School Leadership” the goal of the study was to find out the factors influencing the use of an efficient active learning strategy in secondary classrooms in the Bale zone in Ethopia. The study population was made up of 15 school officials, including supervisors, instructional leaders, principals, and 434 students in grades 9 and 10. The main

instruments for collecting for this study were structured questioners, structured classroom observation check list and focused interview. These instruments were used for the grouping of the data and were presented, analyzed and interpreted by using a mixture of quantitative and qualitative data descriptive method using percentage in table and qualitative explanation. It was observed from the study that the application of active learning methods was influenced by lack of commitment of teachers, large class size, lack of resource, the misconception of student centered teaching; to be only grouping the students and assigning assignments that call for a lot of space for seating arrangements in an inefficient educational facility. Based on these finding of this study, the recommendation was to provide teachers workshops, create additional classrooms to balance the number of pupils in a classroom, and providing training for teachers in service on how to use the student-centered method.

Learning readiness is the requirement for the effective learning process among school students. In the study of Dangol and Shrestha (2019) titled 'The relationship between learning readiness and educational achievements of school students', The research design was Cross sectional survey and self-administered questionnaire from 400 students of a cluster was employed. The data collected was analyzed with inferential statistical measures like Karl-Pearson correlation and regression analysis. The results of this study showed that there was significant relationship between learning readiness and students' educational achievement. The overall conclusion, was fostering in students a readiness for learning as an essential task for attaining a high level of student academic achievement. Therefore, where there is no learner readiness the instruction and learning procedure is ineffective.

Widodo (2016) in his research "Assessing the Readiness of Student Learning Activity and Learning Outcome" evaluated the effect of the students' readiness to the students' activeness, the

effect of the students ‘readiness to the students’ achievement, and the impact of the students’ activeness to the students’ achievement. In the study correlation descriptive method was used with a population of 127 students from Junior High School 2's first class in Cibingbin, Kuningan, and West Java. The study's conclusions demonstrated that students' readiness for learning was described as being in the high group, at 69.35%. The students' level of activity was likewise described as high (85.47%). Furthermore, a high grade (84.35%) was assigned to the students' accomplishment. Both the student's readiness and their activity had a good correlation with their achievement, as well as the student's activeness with their achievement.

In Okonkwo (2016) study on the “Impact of Instructional Materials in Teaching and Learning of Physics in Senior Secondary Schools: A Case Study of Some Selected Secondary Schools in Onitsha Educational” the goal of the study was to measure the effect of teaching and learning resources for physics in senior secondary schools. Simple random technique was used for sampling and the total population of the study was 100 students and 15 physics teachers, the study utilizes the simple random sampling technique. Questionnaire and Physics Achievement Test (PAT) were the instrument used for data collection. The reliability of (PAT) was at 0.82 and was used measure the students’ achievement in physics while the questionnaire was used to determine how the physics teachers' performance was improved through the usage of teaching resources. The students were split up into two groups: the control group and the experimental group. The experimental group was taught using instructional materials while the control group was taught without instructional materials. The data collected was analyzed using mean, simple percentage, and z- test statistics. The results revealed that students trained with instructional materials performed better than those trained without instructional materials. The results also showed that the application of educational resources in the classroom influences the performance of the physics

teacher positively. The null hypothesis tested at significance level of 0.05 indicating that there is a significant difference between the physics achievement scores of those taught with instructional resources as well as those instructed without instructional materials. Recommendations from the study advised that teachers, students, parents and educational administrator and policy makers should make concerned efforts to make sure that instructional materials are used in teaching and learning of physics in our secondary schools. Also enough time should be assigned for physics class in the school time table for efficient application of these resources in physics lessons. Other suggestions was that seminars, workshop on the use of pedagogical resources should be organized for physics teachers to help update their knowledge and improve on their teaching effectiveness.

The research of Muhammad (2020), titled "Impact of Instructional materials on students' academic performance in Physics, Sokoto-Nigeria". His study was on how instructional materials will enhance students' physics proficiency in some selected secondary schools in Sokoto Nigeria. Probability sampling involving multi stage sampling was used to select 3 schools with a population of 2,850 students and 125 teaching staff making a total of 2975 respondents were used for the study, descriptive survey method was engaged and data was collected from sample schools through inquiry methods, the research questions were analyzed using percentages. The data analysis and interpretation revealed that there is inadequate materials and that only few physics teachers in Sokoto uses instructional materials in teaching which has effect on the level of students' performance. The study recommendation was that policy makers provide adequate pedagogical resources and oversee the utilization and upkeep of these materials.

In the study of Oladejo, Olosunde, Ojebisi and Isola (2011), titled "Instructional Materials and Students' Academic Achievement in Physics: Some Policy Implications" the effect of using

standardized and improvised instructional materials on the academic performance of Nigerian Secondary School Physics Students in Oyo State was examined. The quasi-experimental of the pretest – posttest non-randomized control group was the research design used. Three coeducational secondary schools were used as samples and they were selected using the purposive sampling technique. Only S.S. III class was provided for the study by each school. The instructors Instructional Guide (TIG) was used to train the instructors in the experimental groups and the Physics Achievement Test (PAT) was utilized to measure the academic achievement of the pupils. Reliability was gotten by pilot testing the instrument. There was a 0.76 reliability coefficient. Three hypothesis were developed and put to the test at the significance level of 0.05. ANOVA and ANCOVA were used to examine the data. The findings indicated that there is a noteworthy disparity in the academic performance of students instructed using typical instructional materials, those instructed with improvised instructional material and those in the traditional instruction. As a result, the students who were taught utilizing makeshift teaching materials had the greatest posttest accomplishment score (F=74.94), followed by students who were taught using traditional teaching materials (F=63.07), and the control group had the lowest score (F=39.89). Additionally, gender had no discernible impact on students' performance in physics, despite the fact that females performed better than boys. Ultimately, there was no discernible connection between gender and treatment for student achievement in physics. Therefore, Physics teachers were encouraged to be resourceful in instructional materials selection, planning and utilization so as to limit the cost of producing and maintaining instructional materials. The researchers also suggested that teachers of Physics in secondary education should be encouraged to employ improvised instructional resources since they promote and enhance the effectiveness of the teaching-learning process.

In the study of Wambui and Paul (2013), titled “Effect of Use of Instructional Materials On Learner Participation in Science Classroom in Preschool in Kiine Zone Kirinyaga County Kenya. The study's objective was to prove the importance of grouping of learners on involvement in science classroom, to observe the degree to which availability and adequacy of instructional materials improve learners' participation and to determine the effect of management of records on the improvement in learners' participation in science classroom. The research design used was a descriptive survey design where qualitative data was collected. This design was non-experimental requesting information from teachers on the instructional materials they use in teaching pupils in the pre-school. Stratified sampling technique was used in sampling since the population embraces a number of distinct categories of teachers' qualifications. In the process of the study the researcher found that instructional materials are not effectively used in the study area due to large of number of learners per class, lack of enough compound in, lack of learners’ confidence, language barrier, teachers' negative attitude, lack of professional skills and domestic violence. The recommendation of the research was that early Childhood Education centers be increased to cater for the large number of learners per class. The study also recommended that more teachers be employed and deployed to various Early Childhood centers in the study area.

The study of Tuimur and Chemwei, (2015) titled “Availability and use of instructional materials in the teaching of conflict and conflict resolution in primary schools in Nandi North district, Kenya” The study examines the availability and use of instructional materials necessary for the education of Conflict and Conflict Resolution as a topic in Social Studies subject in primary schools in Nandi North District in Kenya. Descriptive survey was used as the research design to carry out the study. The population of study included teachers of Social Studies at Kosirai Division,

Nandi North District. Using purposive sampling, a sample of forty-five standard seven Social Studies teachers was selected from this population. Questionnaire, document analysis and classroom observation checklist were the instrument used for data collection. Frequencies and percentages were the descriptive statistics used to analyze the data. The study's findings demonstrated that a large number of social studies teachers in elementary schools had not taken any in-service training that would have prepared them to teach newly developing topics like conflict and conflict resolution in the context of the current primary curriculum. Sufficient instructional materials for effective teaching of the topic was not available for use by the teachers. The study concluded that considering their current capacity to create pertinent teaching and learning resources and successfully apply them in the teaching and learning process, teachers' preparedness to teach conflict and conflict resolution is insufficient It was also noticed that the available instructional materials in the sampled schools were inadequate. The recommendation of the study was that social studies teachers must be reeducated and prepared on how to use suitable educational resources to impart conflict and conflict resolution.

In the study of Kaizer and Okoli titled “Availability and Adequacy of Instructional Materials for Teaching Office Skills in Business Studies at The Secondary School Level in Delta State, Nigeria”. A survey research design was used in the investigation and 595 Business studies teachers in secondary schools in Delta State made up the population for the study. Using the stratified random sampling technique, 119 Business studies teachers were sampled for the study. The study was guided by two research questions and two hypotheses. A checklist titled: “Availability and Adequacy of Instructional Materials for Teaching Office Skills (AAIMTOS)” was used for data collection. Data collected were evaluated using frequency and simple percentages to answer the research questions and z-test statistics for testing the hypothesis with

significance levels of 0.05. The results of the investigation showed that eight of the ten identified instructional materials were neither available nor adequate for the teaching of office skills in business studies at the secondary school's level in Delta State. The study concluded based on the findings, that the government, school administrators and other stakeholders in secondary education should make provision for adequate instructional materials for teaching office skills in business studies in secondary schools in Delta State.

Abdu-Raheem (2016) in his study which he titled "Effects of Instructional Materials on Secondary Schools Students' Academic Achievement in Social Studies in Ekiti State, Nigeria". He stressed the impact of instructional materials to the academic accomplishment of secondary school students in Social Studies in Ekiti State. The study population included all Class II students of Junior Secondary School from among which 180 were sampled. The study instrument was a 30 multiple-choice self- designed Social Studies Achievement Test (SSAT). Validation of the instruments was done by specialists in Social Studies Test and Measurement and Educational Management. Test-re-test method and estimation of internal consistency was used to determine the reliability. There were acquired reliability coefficients of 0.73 and 0.75, respectively. Four hypotheses derived from the investigation were tested at the 0.05 significance level. The acquired data was analyzed using statistical tools such as ANOVA and ANCOVA. In the study it was discovered that there was a significant variation in the pre-test and post-test of students in the experimental group. The study additionally discovered that there was statistical significant of gender in social studies. The conclusion of the study was that students who were taught with instructional materials achieved better results than those taught without. The recommendation was that social studies teachers should use essential teaching resources in their lessons and improvise in situations when those resources are unavailable.

In the study of Ordu and Eric (2019), tilted ‘Utilization of Instructional Materials and Students’ Academic Performance in Junior Secondary Schools in Selected Local Government Areas, Rivers State’. The study aim was to examine the relationship between utilization of instructional materials and students’ academic Performance in junior public secondary Schools. Selected Local Government Areas, Rivers State was used for the study. The study design adopted was the correlational research and a the study population was 9,368 students in Junior Public Schools in Ikwerre and Emohua Local Government Areas, five research questions and three hypotheses guided the research. Simple random sampling was used to get a 956-person sample size was used and a self-designed questionnaire was employed as the tool for gathering data. The instrument reliability was found using the test-retest methodology. Using the Pearson Product Moment Correlation Coefficient Method, the reliability coefficient of 0.84 was determined. In order to address the study questions, collected data were analyzed using mean statistics, and the hypotheses were tested at the 0.05 level of significance using Pearson Product Moment Correlation statistics. The study's conclusions demonstrated a relationship between students' academic achievement and their use of graphic materials. The results also showed a relationship between students' academic achievement and computer use (hardware and software). It was suggested, based on the study's findings that the government and other relevant parties provide enough resources for teaching and learning, including computers, graphic materials, still images, and print media for public schools.

Lotulung(2023), in his study ‘Highschool Student Engagement in Active Learning Classrooms’ examined the degree to which high school students participate during classes, he used the descriptive analytical on-going survey method and examined the level of engagement in students in Indonesian high schools especially as they engaged in the lesson, during whole-class

discussions. Turn count, word count, and unprompted student discourse were the three metrics utilized to look into the engagement. While the focus was on student interaction level, the teacher interaction level will also be measured in order to analyze the conversation and make a comparison with the student speak measurements. 380 students enrolled in a private high school in grades 10 through 12 made up the responders. Thirty meeting sessions were recorded, from which data was retrieved. A review of the transcripts from the observation in the classroom was used to determine the level of participation. And using the transcripts, the three engagement metrics were counted, statistical tools were used for analyzing. The study's conclusions demonstrated a 5:1 teacher-to-student ratio in which the teacher predominated class conversation, as well as minimal student participation in terms of unprompted talk and turn-counting during whole-class lectures and discussions. He noted that this ratio did not replicate in individual projects, peer work and group work. Therefore, the nature of the class interaction would be differed from other situations or when using other methods. Based on this observation of classroom talk, teachers are encouraged to shift the teaching practice toward a more student-centered active classroom where the students are deeply engaged in classroom interaction. This could be achieved by being conscious about the way lesson was carried and by giving focus toward student engagement.

In the study of Diepreye and Odukoya(2019) titled “The Impact of Passive and Active Teaching Methods on Students’ Learning Among Secondary School Students in Yenagoa, Bayelsa State”. The study was aimed at finding the influence of passive and active instruction techniques on the learning of students in Yenagoa, Bayelsa State. Experimental design used for the study is the Pre-test post-test. 200 secondary school students were selected randomly for this study ($X = 14.42$; $SD = 0.91$). The sample was made of 72 males and 124 females. Data collection was via administration of achievement test in Biology with precise focus on Osmosis and Diffusion. Data

analysis was done using ANOVA. The findings proved that active teaching strategies significantly affect students' learning than the passive teaching method at $p<.05$ level four conditions ($F(3,192) = 162.03$, $p = .000$). Recommendations from this study was that the Education Ministry should start an education campaign about the need for instructors to use efficient teaching techniques in the classroom.

Atsuwe and Friday (2016) in their study on "An Investigation into the Effect of Active Learning Approach on Senior Secondary School Students' Achievement in Physics in Makurdi Local Government Area" the study examined the effects of active learning strategy for measuring students' mastery of the fluid mechanism concept in Nigerian Senior Secondary school One Physics in the Makurdi Local Government Area of Benue, The sample consisted of 300 students studying physics in Senior Secondary One (SS1), 60 students from five schools. A simple random sampling method was employed to choose five schools from the population and quasi-experimental design was in the investigation. The standard deviation and mean were employed to examine the data gotten from the respondents from 20 multichoice Physics analysis test (PAT) conducted. Hypothesis was tested using the T-test at 5% level of significance, it was discovered from the survey that there is a notable variation in students' academic performance taught physics using active learning approach and those taught without using active learning approach. The recommendations made from the study include that the curriculum for training teachers in Nigerian universities and colleges of education should be revisited with emphasis placed on ways to efficiently use active learning approach for teaching science subjects, especially physics also that Government, Ministry of Education, proprietors and school heads should reward teachers who through effective use of active learning approach achieve results.

Summary of Literature Review

We have exhaustively reviewed relevant literature that discussed the variables influencing the use of active learning in teaching and learning Physics in senior secondary schools. A conceptual framework that clearly explains active learning approaches, its element and common strategies used in learning physics in senior secondary schools was also discussed. It was observed that active learning approach is not fully implemented due to some of the perceived factors which were highlighted and discussed; class size, readiness of learner to learn, availability of instructional materials and utilization of instructional materials. The researcher therefore seeks to fill this research gap by finding out the extent of relationship that exist between active learning approach and these factors in public senior secondary schools in Oredo Local Government Area of Edo State.

CHAPTER THREE

METHODOLOGY

This chapter describes the study design, the study population, sample and sampling techniques and the research instrument that served as a data collection tool. It also discusses the validity of the instrument, reliability of the instrument, method of data collection and method of data analysis.

Research Design

The research design that was used for achieving the purpose of the study is correlational survey research design. This design is aimed at determining the extent to which a relationship exist between the independent variables (Class size, readiness of learners towards learning, availability of instructional materials and utilization of instructional materials) and the dependent variable (Active learning to learning of Physics).

Population of the Study

The population of the study comprised of all physics students in the 14 Public Senior Secondary Schools in Oredo Local Government Area of Edo State (see Table 1). Thus, the population is 3778.

Sample and Sampling Technique

The sampling technique that was employed by the researcher was simple random sampling technique and 5 schools were selected with a study population of 1,016 and according to Gay, Mills & Airasian, (2012), the 10% rule was applied to achieve a sample size of 102.

Research Instrument

The instrument used to collect data in this research was a twenty- six item instrument titled: "Factors Influencing the Use of Active Learning Approach in learning Physics in Public Senior Secondary Schools in Oredo Local Government Area of Edo State". The instrument developed by the researcher for this study was a structured closed ended questionnaire designed to enable the researcher get information on the relevant variables of the study.

Validity of the Instrument

The research instrument (questionnaire) was subject to validation by three experts (lecturers) from the fields of Education and Measurement and Evaluation. Their constructive criticism and suggestions were implemented into the final draft of the instrument.

Reliability of the Instrument

In order to ensure reliability of the instrument, the instrument was administered to 30 students, who were not part of the sample for the study. Thereafter cronbach Alpha statistics was employed to test the internal consistency and the reliability. Data collected was correlated and Cronbach Alpha coefficient values of 0.755 and 0.779 were obtained respectively.

Method of Data Collection

The instrument for data collection was administered by the researcher after due permission was obtained from the different school authorities. Basic explanations was provided for the respondents, including confidentiality of their response and their consent was gotten before the questionnaires were administered to the respondents in the five (5) selected schools within Oredo Local Government Area as mentioned in the population of the study.

Method of Data Analysis

The data that was gathered from the respondents was analyzed using statistical tools; Pearson product moment correlation coefficient (PPMCC) was used to address the study questions while linear regression was used to test the hypothesis at 0.05 level of significance.

Uzoagulu (2011) advocated a range of coefficient values (r) for decision criteria based on correlation and regression studies, which should be applied in the following order: The correlation or relationship implied by the coefficients r-value between ±.8 and ± 1.0 was very high; similarly, the correlation or relationship implied by ±.6 and ±.8 was high; the correlation or relationship indicated by ±.4 and ±.6 was moderate; the correlation or relationship implied by ±.2 and ±.4 was low; the correlation or relationship implied by ±.0 and ±.2 was very low; the correlation or relationship implied by ± 1.0 was perfect; and the coefficient r-value of 0 suggested there was no correlation or relationship. On the other hand, a negative correlation or link is shown by a negative coefficient r-value, suggesting that when one variable rises, the other falls. Likewise, if the coefficient r-value is positive, it is a positive correlation, meaning that when one variable rises, the other rises as well, or as one variable falls, the other falls.

CHAPTER FOUR

ANALYSIS OF DATA AND PRESENTATION OF RESULTS

This chapter dealt with the presentation and discussion of results for the research questions and hypotheses. The presentation of results is followed by the discussion of findings.

Presentation of Results

Research Question 1: To what extent does class size influence the use of active learning approach in learning of physics?

Table 1: Pearson's Correlation between Class size and Active Learning Approach.

S/N	Variables	N	r	p	Remark
1.	Class size				
		102	-.016	.874	VLE
2.	Active Learning				

Table 1 shows the data on Pearson's correlation between class size and active learning approach among public senior secondary school students in Oredo Local Government Area of Edo State. The overall correlation implied that relationship between class size and the use of active learning approach to physics is to a Very low extent (r = -.016). By and large, there is generally a negative low correlation between class size and active learning approach among public senior secondary school students in OLGA of Edo State.

Research Question 2: To what extent does readiness of students influence the use of active learning approach in learning of physics?

Table 2: Pearson's Correlation between Readiness and Active Learning Approach.

S/N	Variables	N	r	P	Remark
1.	Readiness of learners				
		102	.004	.967	VLE
2.	Active Learning				

Table 2 shows the data on Pearson's correlation between readiness of students and active learning approach among public senior secondary school students in OLGA of Edo State. The overall correlation implied that the extent to which readiness of students influence the use of active learning approach in physics is null that is very low extent (r = .004). By and large, there is generally a negligible correlation between readiness of students and active learning approach among public senior secondary school students in Oredo Local Government Area of Edo State.

Research Question 3: To what extent does availability of instructional materials influence the use of active learning approach in learning of physics?

Table 3: Pearson's Correlation between availability of instructional materials and Active Learning Approach.

S/N	Variables	N	r	P	Remark
1.	Availability of Instructional materials	102	.452	.000	ME
2.	Active Learning				

Table 3 shows the data on Pearson's correlation between availability of instructional materials and active learning approach among public senior secondary school students in OLGA of Edo State. The overall correlation implied that availability of instructional materials influence the use of active learning approach to physics in a moderate extent (r = .452). By and large, there is generally a moderate correlation between availability of instructional materials and the use of active learning approach among public senior secondary school students in Oredo Local Government Area of Edo State

Research Question 4: To what extent does utilization of instructional materials influence the use of active learning approach in learning of physics?

Table 4: Pearson's Correlation between utilization of instructional materials and Active Learning Approach.

S/N	Variables	N	r	P	Remark
1.	Utilization of instructional materials	102	.673	.000	ME
2.	Active Learning				

Table 4 shows the data on Pearson's correlation between Utilization of instructional materials and active learning approach among public senior secondary school students in OLGA of Edo State. The overall correlation implied that Utilization of instructional materials influence the use of active learning approach to physics in a moderate extent (r = .673). By and large, there is generally a moderate correlation between Utilization of instructional of and the use of active learning approach among public senior secondary school students in Oredo Local Government Area of Edo State.

Research Hypothesis 1: Class size does not significantly influence the use of active learning approach in learning of physics.

Table 5: Coefficients of Simple Linear Regression for the Aggregated Class size influencing the Use of Active Learning Approach in learning of Physics.

	Unstandardized Coefficients		Standardized Coefficients			
	B	SEB	Beta (β)	*t*	*P*	Decision
Constant	28.182	4.348		6.482	.000	Accept *H0*
Class size	-.258	1.616	-.016	-.159	.874	

R^2 = .000, Adjusted R^2 = -.010, F(1, 101) = .025

Data presented in Table 5 show the estimates of coefficient of the influence of class size on the use of active learning approach in learning of physics. The Table shows the significant coefficients (F = .025, β = -.016, t = -.159, p > .05), which is also a confirmation of the result obtained. The corresponding adjusted r-square (-.010) shows that less than 1% of the variance in the use of active learning approach in learning of physics is influenced by class size signifying a negative or inverse relationship. In all, class size is found to significantly influence the use of active learning approach negatively. Hence, research hypothesis 1 is accepted in the study.

Research Hypothesis 2: Readiness of Students to learning of Physics does not significantly influence the use of active learning approach in learning of physics.

Table 6: Coefficients of Simple Linear Regression for the Aggregated Readiness of Students Influencing the Use of Active Learning Approach in learning of Physics.

	Unstandardized Coefficients		Standardized Coefficients			
	B	SEB	Beta (β)	*t*	*P*	Decision
Constant	27.301	4.896		5.576	.000	Accept *H0*
Readiness of learners	.009	.228	.004	0.41	.967	

R^2 = .000, Adjusted R^2 = -.010, F(1, 101) = .002

Data presented in Table 6 show the estimates of coefficient of the influence of readiness of students on the use of active learning approach in learning of physics. The Table shows the significant coefficients (F = .002, β = .004, t = 0.41, p > .05), which is also a confirmation of the result obtained. The corresponding adjusted r-square (-.010) shows that less than 1% of the variance in the use of active learning approach in learning of physics is influenced by readiness of students to learning of physics. In all, readiness of students to learning of physics does not significantly influence the use of active learning approach. Hence, research hypothesis 2 is accepted in the study.

Research Hypothesis 3: Availability of instructional materials does not significantly influence the use of active learning approach in learning of physics.

Table 7: Coefficients of Simple Linear Regression for the availability of instructional materials influencing the Use of Active Learning Approach in learning of Physics.

	Unstandardized Coefficients		Standardized Coefficients			
	B	SEB	Beta (β)	*t*	*P*	Decision
Constant	15.165	2.529		5.997	.000	Reject *H0*
Availability of instructional materials	.761	.150	.452	5.070	.000	

R^2 = .204, Adjusted R^2 = .197, F(1, 101) = 25.707

Data presented in Table 7 shows the estimates of coefficient of the influence of availability of instructional materials to learning of physics on the use of active learning. The Table shows the significant coefficients (F =25.707, β = .452, t = 5.070, p <.05), which is also a confirmation of the result obtained. The corresponding adjusted r-square (.197) shows that l9.7% of the variance in the use of active learning approach in learning of physics is influenced by availability of instructional materials. In all, availability of instructional materials is found to significantly influence the use of active learning approach in learning physics. Hence, research hypothesis 3 is not upheld in the study.

Research Hypothesis 4: Utilization of instructional materials does not significantly influence the use of active learning approach in learning of physics.

Table 8: Coefficients of Simple Linear Regression for the Utilization of instructional materials influencing the Use of Active Learning Approach in learning of Physics.

	Unstandardized Coefficients		Standardized Coefficients			
	B	SEB	Beta (β)	*t*	*P*	Decision
Constant	9.881	2.017		4.898	.000	Reject *H0*
Utilization of instructional materials	1.188	.130	.673	9.107	.000	

R^2 = .453, Adjusted R^2 = .448, F(1, 101) =82.935

Data presented in Table 8 shows the estimates of coefficient of the influence of Utilization of instructional materials on the use of active learning to learning of physics. The Table shows the significant coefficients (F =82.935, β = 1.188, t = 0.107, p <.05), which is also a confirmation of the result obtained. The corresponding adjusted r-square (.448) shows that 44.8% of the variance in the use of active learning approach in learning of physics is influenced by Utilization of instructional materials. In all, Utilization of instructional materials is found to significantly influence the use of active learning approach in learning of physics. Hence, research hypothesis 4 is not upheld in the study.

Summary of Findings

Based on the data collected and analyzed, there was four findings in this study and they included:

1. Class size negatively influences the use of active learning approach in learning of physics.
2. Readiness of learners towards learning does not significantly influence the use of active learning approach in learning of physics.
3. Availability of instructional materials significantly influences the use of active learning approach in learning of physics.
4. Utilization of instructional materials significantly influences the use of active learning approach in learning of physics.

Discussion of Findings

The first finding of this study showed that class size negatively influences the use of active learning approach in learning of physics in public Senior Secondary Schools in Oredo Local Government Area of Edo State that is as the class size increases the use of active learning approach decreases. This finding was in agreement with Ajayi, et al. (2017), their findings from their research concluded and supported that Nigeria should implement 40:1 student teacher ratio at most for good classroom management, participation, and communication. Also in line with the researcher's findings was Ayeni & Olowe (2016), their study revealed that in higher education, large class sizes have a detrimental influence on the efficient teaching and learning of business education. There is practically no correlation between big class sizes and efficient teaching and learning. They recommended among other things, that the administration ought to hire additional instructors in other to achieve improved academic performance. Based on the researcher's findings it was observed that when the number of students to a teacher ratio is high a teacher is likely to be discouraged

from implementing active learning approach. A large population will also give room for some students to be distracted and the teacher might not be able to manage all students at the same time.

The second finding of this study revealed that the correlation between readiness of learners towards learning and use of active learning approach is negligible resulting to the acceptance of hypothesis which states that readiness of learners does not significantly influence the use of active learning in learning of physics in public Senior Secondary Schools in Oredo Local Government Area of Edo State. Harackiewicz, Smith and Priniski (2016) noted that interest is a powerful motivational process that energies learning and guides academic trajectories, This findings reveals that active learning can be effective in a class without the readiness of the learner as lack of learners readiness in most cases is due to the fact that the lesson is not stimulating and engaging. So by introducing active learning approach while teaching physics the teacher can get the learner to be interested and engaged during the lessons.

It was discovered from the third finding that availability of instructional materials significantly influences the use of active learning approach in learning of physics in public Senior Secondary Schools in Oredo Local Government Area of Edo State. The finding of this study was in agreement with Okonkwo (2016) which revealed that students who were taught in their physics classes' students using instructional resources outperformed those who were not taught using these materials. He also went further to show from his findings that the availability of instructional materials positively affected the teachers' performance during lessons. In line with my findings was the research done by Muhammad (2020), which exposed the fact that there was inadequate instructional materials and that only few physics teachers in Sokoto were using instructional materials in teaching and that this was affecting level of students' performance. Provision of adequate instructional materials and the monitoring of the use and maintenance of these materials were recommended. The researchers' findings showed that the availability of instructional helps to ensure that the students can effectively engage in hands on learning which in turn enhances constructive and effective learning.

The fourth finding revealed that the utilization of instructional materials significantly influences the use of active learning approach in learning of physics in public Senior Secondary Schools in Oredo Local Government Area of Edo State. This finding was supported by Oladejo et al., (2011) , the researchers concluded that the utilization of instructional materials promote and encourage effective teaching-learning process, therefore, Physics teachers should be encouraged to use them in secondary education. Ordu & Eric (2019) in their research work also supported my findings and part of their recommendations was that the government and other stakeholders should make adequate provision of instructional materials such as computers, graphic materials, still picture and print media to aid teaching and learning in public schools. The researchers' results implied that these materials when used suitably will aid learning to be effective and efficient, so it's not enough that these materials are available but the class instruction should be designed in a way where there is sufficient time to include the use of instructional materials to encourage active learning.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Summary

The purpose of this study was to assess to the extent to which some factors influence the use of active learning approach in learning Physics in Public Senior Secondary Schools in Oredo Local Government area of Edo state, Nigeria. Four research questions were formulated to guide the study. Research question one pursued to find the extent to which class size influences the use of active learning approach in learning of physics. Question two sought to discover the extent readiness of learners towards learning influences the use of active learning approach in learning of Physics. Question three evaluated the extent to which availability of instructional materials influence the use of active learning approach in learning of physics. Question four examined the extent to which utilization of instructional materials influence the use of active learning approach in learning of physics.

This study adopted a correlative design and targeted 14 senior secondary schools in Oredo Local Government Area of Edo State, Nigeria. The sample of the study was gotten by applying simple random sampling and then Gay 10% making total sample size of 102 senior secondary schools students from five secondary schools in Oredo Local Government Area of Edo State, Nigeria.

The finding of this study showed that there is a negative correlation between class size and the use of active learning approach which proves that the larger a class size is, the lesser the use of active learning approach in the class. Once the number of students exceeds the recommended 30-40 students in a class, the teacher is likely to be discouraged in applying active learning approach during physics lessons, as the duration of the lesson is barely enough to exhaust the lesson plan.

Based on the data collected and analyzed the finding of this study showed a negligible correlation between readiness of learners and the use of active learning approach in learning physics, in public senior secondary schools in Oredo Local Government Area of Edo State, Nigeria. This finding revealed that readiness to learn does not have great influence over the use of active learning approach in learning physics, therefore if the physics teacher has the right philosophies and is well trained in the use of active learning approach he will be able to create an engaging and interacting lesson that will in turn stir up readiness of learners.

The finding of the study also revealed that a positive relationship exist between availability of instructional materials and use of active learning approach, meaning that the when adequate instructional materials are available the use of active learning approach is highly encouraged. This study finding, finally showed that a positive relationship exist between utilization of instructional materials and use of active learning approach, proving that when there is trained use of instructional materials during lesson, active learning is encouraged.

Conclusion

The study found a negative correlation between class size and the use of active learning, a negligible correlation between readiness of learners and the use of active learning and finally a significant correlation between availability and utilization of instructional materials and use of active learning. Based on these results the researcher concludes that class size is a negative predictor to the use of active learning approach. The study also concludes that readiness of learners is not a predictor to the use of active learning approach. The study further concluded that availability and utilization of instructional materials is a positive predictor for the use of active learning approach.

Recommendations

Based on the results of the study, it is recommended that;

1. The government, ministry of education and school heads should work towards ensuring that the 40:1 ratio in a class is aimed at in every government school
2. Seeing that as a nation we have a rapid growing population and not much funds targeted towards education, training of Physics teacher should be of utmost priority so as to equip them with diverse philosophies and strategies to help them thrive in a large class size.
3. Physics teachers' workshop should be done regularly to ensure that teachers are updated on skills and practical ways to implement active learning approach which can help them fully appreciate this approach over traditional approach.
4. The ministry of education, curriculum planners and lesson planners should put into consideration the time made available for physics on the time table, so as to create enough time for incorporation of active learning during lessons.

Suggestion for Further Research

Based on the findings of the study the researcher makes the following suggestions for further research;

1. Further research should be conducted to investigate other factors that influences the use of active learning approach.
2. Further research on the influence of class size on the use of active learning.

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