EXTERNAL FACTORS INFLUENCING THE USE OF ACTIVE LEARNING APPROACH IN LEARNING PHYSICS IN SENIOR SECONDARY SCHOOL IN OREDO LOCAL GOVERNMENT AREA OF EDO STATE

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Abstract
The aim of this study was to examine some factors influencing the use of active learning approach in learning physics in public senior secondary schools in Oredo local government area, Edo State. To conduct the study a correlational survey research design was employed to examine the relationship between class size, readiness of learner, availability and utilization of instructional material with the use of active learning approach. The participants of the study were 102 students from five public senior secondary schools in Oredo local government area they were selected using simple random technique, a structured questionnaire was used for data collection. The validity and reliability of instrument was well established. The data gotten was analyzed using Pearson correlation matrix to answer research questions and simple linear regression to test the hypotheses. The results showed a negative correlation between class size and the use of active learning approach, a negligible correlation between readiness of learner and the use of active learning approach, a significant positive correlation between availability of instructional materials and utilization of instructional materials with the use of active learning approach. The findings challenged the conventional findings that learners' readiness influences the use of active learning, it revealed that if a physics teacher is well equipped with the right skills and philosophies

he/she can activate a learner's readiness and interest during lessons. Based on these findings the researcher recommended 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.

Keywords: Active Learning Approach, Class size, Readiness of learners Availability and Utilization of instructional materials

Introduction

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.

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

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.

Literature Review

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.

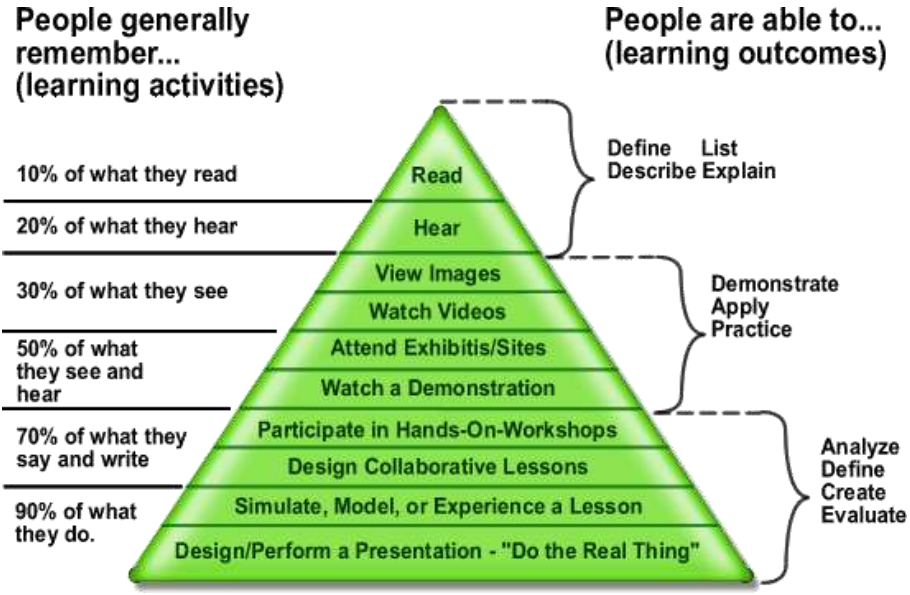

Fig 2: Learning Pyramid
Source: Satu Öystilä, (2015)

Fundamentals of Active Learning

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

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).

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.

Theoretical Framework

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

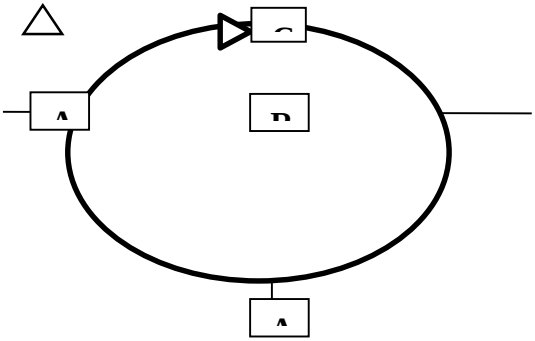

Figure 2 –Kolb's experimental learning cycle
Source: Developed by the Researcher

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.

Empirical Review

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.

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.

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.

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..

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.

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 result

Methodology

The research design was correlational survey research design 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). 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. 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. 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. 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. 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. The data was analyzed using 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.

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.

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.

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.

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