



Perceived Influence of Modern Teaching Methods on Academic Performance among Public Secondary School Students in Port Harcourt Metropolis Rivers State: Implication for Educational Administration

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ABSTRACT

This study was conducted to examine the perceived influence of modern teaching methods on academic performance among secondary school students in Port Harcourt Metropolis in Rivers State. The descriptive survey research design was used. A total of 7, 488 senior secondary school students and 2,019 teachers in the twenty-six (26) public secondary schools in Port Harcourt Metropolis of Rivers State constituted the population of the study. A sample of 630 senior secondary school students were selected through stratified random technique while purposive sampling technique was used to choose the 280 teachers from 14 public secondary schools in Port Harcourt Metropolis. A self structured research instrument titled “Influence of Modern Teaching Methods on Academic Performance Questionnaire” formatted on 4-point Likert rating scale was used for data collection. The instrument was face and content validated by the Researcher’s Supervisor and an expert (lecturer) in Measurement and Evaluation of Department of Educational Foundations (Rivers State University). A reliability coefficient of 0.83 of the instrument was realized using the test-retest method and Pearson Product Moment Correlation. Mean scores and standard deviations were used to answer the research questions while z – test was used to test the hypotheses at 0.05 level of significance. The study revealed that the use of collaborative and mobile technology approaches, aspects of modern teaching methods, facilitate high academic performance among secondary school students. Based on the findings, the Researcher recommended amongst others that: management of secondary schools board, teachers, principals and educational curriculum planners should ensure modern teaching methods are effectively and always integrated into teaching-learning practices for the students to acquire the 21st century skills and competencies for life-long learning and survival in the globalized workplace setting.

Keywords: academic performance, teaching methods, students

INTRODUCTION

The globalization of the world has made various school systems to rethink ways learners can acquire skills and knowledge that would enable them explore and function effectively in the twenty-first century society. Critical in this drive are the teaching methods that provide measures of addressing declining academic performance often experienced among students especially in the secondary schools, especially in Nigeria. In the education system and learning process, the student’s performance in academic activities is of great concern. According Nuthana and Yenagi cited by Mendezabal (2013), the academic performance is a major factor used to evaluate student’s overall abilities and capacities and normally determined by the examination results. Also, it reveals the quality of educational training offered by academic institutions.

Areму (2003) describes “poor academic performance as a performance that is adjudged by the examiner

and some other significant as falling below an expected standard". The effect of reduced academic performance is not only devastating to the learners and the parents but is equally important on the society with regards to lack of workforce in every area of the economy and politics, according to Aremu (2003). The term academic performance refers to the way how the students deal with their studies and how they handle with complete different tasks given to them by their teachers. It is the outcome of education and it investigates to what extent a student, teacher or institution has attained their educational objectives. Academic performance reveals the student ability; and the students who are academically successful have higher self-esteem, higher self-confidence and lower depression and anxiety level when compare to others. On the other hand, academic achievement simply refers to performance results that show the extent to which a student has completed specific goals that were the focus of activities in academic environments such as secondary school, college, and tertiary institutions (Hattie, 2009). It implies the stage of schooling a student has success accomplished and the ability to make success in his or her learnings. For example, when students attain enormous grades in a given task, it is an academic achievement.

However, several causes responsible for poor or declining academic performances amid post-primary school learners have been identified. Some of these causes that students faced in the classroom and have a direct influence on their academic performances and achievements include old teaching methods, inadequate learning facilities, incompetent and unstable teachers, inflexible learning arrangements and trajectories of low achievement (Masters, 2015).

Over decades, many aspects of the old teaching methods like lecture, memorization or rote learning in school which are teacher-centred have been unchanged. These have continued to make teachers present subject matters mostly in a way that differ from one another, stress on having expertise of huge mass of theoretical and practical knowledge, and make learning individualistic rather than group activity. This phenomenon can make students' experiences of school subjects be at variance with the experiences of those who are exposed to 21st century teaching methods (Master, 2015). Students who are constantly faced with this kind of learning-process in our secondary may experience low academic performances and achievements. The inadequate classroom accommodation leads to overcrowding. This often occurs when more students obtain instruction or lessons in a classroom environment meant for maximal of forty students. The issue of unavailability of instructional staff (teachers) in our public secondary school today is no longer a serious problem, but that of incompetency. Also, the existence of unqualified or underqualified teachers in the classrooms is not a hidden matter. Most of the teachers do not have the basic teaching skills that would enable them to deliver an enduring quality education. This therefore may serve as a factor contributing to decline in academic performance of students in our secondary schools. A situation in which learner are put in heterogeneous (mixed-ability) classes; taught the course contents for the given class level, assessed and graded students' performance on that course contents based on how by teachers pose as a risk factor for pitiable students' academic outcome (Master, 2015) because this inflexible learning arrangement does not consider students' differences and beliefs.

Trajectories of low achievement, however, to a reasonable extent affect academic activities of students. According to Master (2015), during the yearly admission of students, most would-be admitted students have learning disabilities that make them lack the required requisites to square up with the yearly class expectations and also them (students) remain affected all through their training leading to their underperformance, disengagement, not regular in school and, in most case, early drop out of school. To help these students, teaching methods that are students' friendly need to be used by teachers to reduce the numbers of them on long-term of underperformance.

Meanwhile, in the quest to overcome the identified learning challenges faced by teachers and students in the secondary schools and support deeper learning to improve students' academic performance, researchers have postulated the following modern teaching/learning methods. Theses modern approaches refer to the 21st century teaching/learning methods that are learners' centred; encourage life-long learning and enhance acquisition of skills for quality delivery in workplace. They include but not limited to: participatory, personalize, problem-based, collaborative, motivational, creative and innovative, tools, strategic questioning, mobile technologies, social media, real-world activities, metacongntive skills, right

relationships, learner-centered model, learning without boarder, life-long, open education and accredited and credential non-traditional learnings (Gijsbers & van Schoonhoven, 2012; Leadbeater, 2008; Learnovation, 2009; Redecker & Punie, 2013). Among the above mentioned modern teaching methods; collaborative and mobile technology learning approaches were considered in the course of this study.

Collaborative learning approach is a teaching/learning method that moves learning from lecture-centred situation to students' collaborative ones. It simply means method and environment which provide opportunity for learners to willingly get involved in a general task where individual learner works with or depends on and share idea or findings with and/or give account to one another (Adolphus, Alamina & Aderonmu, 2013). It gives control of the learning activities to the students.

Mobile learning approach refers to using mobile devices like iPad, Smartphone and other Tablets in classroom instructional situations. The mobile technology approach assists the instructors and learners to have access to learning materials through the internet since there is no time the secondary school system can afford to provide all the needed and necessary textbooks to enhance effective and efficient teaching – learning process; which has remain a learning challenge (Abachi & Muhammad, 2014).

To achieve these expected changes, factors that hinder acquisition of global competencies and skills through meaningful learning need to be reduced to an acceptable state. And this is dependent on appropriate use of modern teaching methods in the classroom by teachers who must consider them as veritable tools for effective and efficient learning. On the other hand, a good teacher should be multi-talented so that he or she can be in order to be up to date with the application of different modern teaching methods in the instructional process. Therefore, every teacher should endeavour to combine different modern teaching methods in order to overcome learning setbacks and encourage better academic performances by the students.

This study, however, examined the perceived influence of modern teaching methods on academic performance among secondary school students in Port Harcourt Metropolis of Rivers State. It concentrates majorly on the extent the use of collaborative and mobile technology approaches in teaching–learning process will improve the students' academic performance in the face of factors responsible for poor academic performance.

Statement of the Problem

The recurring experience of decline in academic performance of public secondary school students particularly in external examinations has become a great concern to parents, teachers and management of schools in our society. Research studies have revealed that majority of students in secondary schools within the Sub-Saharan Africa, Nigeria inclusive, are daily exposed to challenging factors such as teacher-centred instructional method, poor and inadequate learning facilities, inflexible learning arrangement, poor funding, unqualified teachers, and non-digital tools for learning among others (Asikhia, 2010; Master, 2015).

These factors have constantly resulted in poor academic performances of the students because no better academic performance during teaching – learning process can take place in their presence. However, since the students' academic success, especially in senior secondary school certificates examinations of West African Examinations Council (WAEC) and equivalent ones and as well as survival in the workplace of 21st century after graduation are inevitable irrespective of these existing hindrances, it demands that modern teaching methods that can reduce the effects of factors causing students' unimproved academic performance and better support acquisition of 21st century skills are utilized by teachers.

Regrettably, research studies have shown that “transmission” or lecture model which has been seen as an obstacle to effective and efficient learning still posed as the preferred teaching-learning method by teachers in the education environment in much of the countries worldwide (Saavedra & Opfer, 2012). By this report, it is understandable that Rivers State like any other areas in Nigeria may possibly be experiencing the same use of traditional teaching methods (teacher-centred) in our public secondary schools. Against this background, this study intended to ascertain the influence of collaborative and mobile technology teaching methods on academic performance among secondary school students in Port

Harcourt Metropolis of Rivers State.

1.3 Purpose of the Study

The purpose of this study is to investigate the perceived influence of modern teaching methods on academic performance among secondary school students in Port Harcourt Metropolis of Rivers State. Specifically, the study sought to:

1. Determine the extent to which the use of collaborative approach in teaching/learning process influences academic performance among secondary school students in Port Harcourt Metropolis.
2. Examine the extent to which the use of mobile technology approach in teaching/learning process influences academic performance among secondary school students in Port Harcourt Metropolis.

1.4 Research Questions

1. To what extent does the use of collaborative approach in teaching/learning process influence academic performance among secondary school students in Port Harcourt Metropolis?
2. To what extent does the use of mobile technology approach in teaching/learning process influence academic performance among secondary school students in Port Harcourt Metropolis?

1.5 Research Hypotheses

1. There is no significant difference between the mean perceptions of teachers and students on the extent to which the use of collaborative approach in teaching/learning process influence academic performance among secondary school students in Port Harcourt Metropolis.
2. There is no significant difference between the mean perceptions of teachers and students on the extent to which the use of mobile technology approach in teaching/learning process influence academic performance among secondary school students in Port Harcourt Metropolis.

Theoretical Framework

This study relied on Karl Ludwig Von (1968) theory known as System Theory. It stated a system basically consists of four aspects. First, is object; which refers to the parts, elements, or variables within the system. They may be physical or abstract or both, and is based on the nature of the system. Second, is attribute; it talks about the qualities or properties of the system and its objects. Third, is relationship; refers to internal relationships among its objects. Fourth, is environment; a system exists in an environment. However according to Infante et al; 1997) a system, is “a set of things that affect one another within an environment and form a larger pattern that is different from any of the parts”. This theory also identified input, throughput (processing), and output as distinct continual features of an organization. Infante et al; 1997) observed that: “Several system characteristics are: wholeness and interdependence (the whole is more than the sum of all parts), correlations, perceiving causes, chain of influence, hierarchy, supra-systems and subsystems, self-regulation and control, goal-oriented, interchange with the environment, inputs/outputs, the need for balance/homeostasis, change and adaptability (morphogenesis) and equifinality”.

This study considered the System Theory on the premise that a school is system; and within it teaching/learning activity is observed as a throughput (teaching method or process) used to transform inputs (students, teachers and school facilities) into outputs (graduates – skillful and attitudinal). In school, an interrelation between teachers, school facilities and students which constitute an essential condition for the effectiveness of the teaching/learning process are visible.

Truly, a secondary school has objectives aimed at achieving and realization of them depends on the treatment of all the elements partaking in the procedure (students, teachers, resources, teaching methods and challenges and graduates) as interdependent. However, at the centre of ensuring the students are properly nurtured and exposed to transforming skills through application of ideal teaching/learning processes no matter the difficulties posed by the learning environment of the secondary school as a social system are the teachers, who interact daily with the learners in the classroom. It therefore requires the teachers to utilize different types of modern teaching methods meaningfully so as to achieve the secondary school objectives and goals as laid down in the National Policy (FRN, 2004).

The second theory considered for this study is Active Learning Theory propounded by Jean-Jacques Rousseau (1712 – 1778) and converses the adoption of teaching methods that permit the students actively

carryout things they do and mirror on what they are doing. Bonwell and Eison (1991) outline the following as some characteristics of active learning:

- (i) Students are involved in more than listening;
- (ii) Less emphasis is placed on transmitting information and more on development of students' skills;
- (iii) Students are involved in higher order thinking (analysis, synthesis, evaluation);
- (iv) Students are engaged in activities (such as writing, reading, discussing, and observing); and
- (v) Greater emphasis is placed on students' exploration of their attitudes and values.

According to Meyers and Jones (1993), these components entail activities that allow students to clarify, question, consolidate, and appropriate new knowledge. They stated that an active learning environment should promote students' interest in the given learning tasks and promote their participation.

In the suggestion of Bonwell and Eison(1991), teachers were urged to consider the creation of an environment that allows students to take risks as vital. According to them, this environment includes:

- (i) Being strongly interested in students as individuals;
- (ii) Considering the feelings of the students about what they do in classroom work.
- (iii) Motivating students to ask questions;
- (iv) Communicating each person's learning, both openly and ingeniously; and
- (v) Persuading students to exhibit creativity, form opinions and share their views among themselves.

Relating this theory to this study, the teachers should be abreast of the dominant learning challenges in the secondary school so as to decide on the teaching methods to use and make learning effective and efficient. The focus must be on strategies that better motive the students own their learning while the teachers act as facilitators or coach. So, the use of collaborative and mobile learning approaches will stimulate active learning as the needs and abilities of the students are given priority consideration. One relevant part of the active learning models that stands it out among other learning models is stress on experience other than just listening as a way of gaining knowledge (Bonwell & Eison, 1991; Coulshed, 1993; Felder & Brent, 2003). Miller and Boud (1996) argue that experience is essential for learning to occur: "Experience cannot be bypassed; it is the central consideration of all learning". This implies that using teaching methods that develop higher order skills create a lively learning situation which enables the students to combine practice and theory to attain experience in the presence of hindrances.

Concept of Teaching Methods

Different persons or authors have defined or described teaching in different perspectives; hence no particular acceptable meaning can be preferred to others. According to Dorgu, 2015, teaching is about bringing desirable changes in learner's learning, abilities and behaviour so that they can contribute to better living. Teaching is also a conscious transmission of an organized knowledge by someone on the basis of enhancing learning in another. It enables the students gain the knowledge, skills and attitudes he or she needs to be responsible citizen. Awotua-Efebo (2001) sees teaching as "an interaction between a teacher and a student under the teacher's responsibility, in order to bring about the expected change in the students behaviour". According to Gagne & Briggs, 1989 in Awotua-Efebo (2001), the essence of teaching, is to assist students to:

- (i) Acquire, retain and be able to use knowledge;
- (ii) Understand, analyze, synthesize and evaluate skills;
- (iii) Establish habits; and
- (iv) Develop attitudes.

In the view of Omieibi-Davies (2011), the changes in behaviour that occur as a result of teaching are as follows:

- (a) An increased store of useful information and the understanding of basic principles in the subject matter;

- (b) An acquisition of psychomotor skills, abilities and habits;
- (c) Possession of desirable attitudes and ideas, such as developing satisfaction about learning outcomes.

Besides, teaching method is any teaching maneuver that can facilitate students' learning and satisfaction (Dorgu, 2015). This therefore implies that using varied teaching methods may bring out diverse types of changes in learning outcomes of the learners. Furthermore, there are a lot of teaching methods that consider the age of the students, body configuration or physique of students (able or disabled) among others; thereby address the issues of learning challenges when utilize appropriately (Dorgu, 2015).

Meanwhile, lecture method, rote learning, and memorization are seen as traditional teaching methods by researchers and mostly teachers' centred which do not advance learners' critical thinking skills or autonomy. These approaches typically make most students to be indifference, develop apathy and boredom. Researchers have also put forth the following teaching methods but not limited them as modern types and known as 21st century teaching approaches or pedagogy 2.0 approaches. They include participatory, personalize, problem-based, collaborative, motivational, creative and innovative, tools, strategic questioning, mobile technologies, social media, real-world activities, meta-cognitive skills, right relationships, learner-centered model, learning without boarder, life-long, open education and accredit and credential non-traditional learning.

It is believed that these teaching models make the 21st century student to be a self directed learner, globally aware, a communicator, an innovator, financially and economically literate, civically engage, a problem solver, a collaborator, information and media literate and a critical thinker.

Concept of Learning

Learning has been defined in a variety of ways based on various theories explaining the process of learning. Dorgu (2015) says that learning involves changes in the behaviour patterns of an individual. He simply defines that "learning is the process of acquiring knowledge or skills and attitudes". Furthermore, learning can be defined as relatively permanent change in behaviour, attitude and ability as result of gained experience.

Rosenberg (2001) explains that the insights of learning are undergoing a distinct transformation. This assertion suggests that teachers' teaching should shift from basing on the act of training only but must demonstrate a positive impact on performance or outcomes. On the other hand, as the world is changing the learning scenario, change in the introduction of information and communication technology is changing too, which gives room to the new concept called e-learning. Some learning principles believed to facilitate teaching of learning in the classroom according to Dorgu (2015) are:-

1. Students learn best when they are actively involved in learning activities.
2. Positive or reward reinforcement is more likely to result in students' learning than negative reinforcement.
3. An environment that provides new and inspiring experiences is a type of reward that enhances learning.
4. Significant material is learnt easily and best retained.
5. Provision of a rich and attractive environment increases learning.
6. Learning elements must be put into a structured pattern for easy recall else it is forgotten.
7. Different experiences systematized around rationale accepted by the students lead to an enhanced Learning.
8. Learning is transferred to the extent the learner sees possibilities for transfer and has opportunities to apply his knowledge.

The above simply call for the understanding of prime objective of teaching; that is, to evolve good education. They also encourage teachers to know the operation and approaches to learning with a view to developing better teaching methodologies. In using any types of these instructional approaches, teachers should consider every learner's distinctive characteristic.

Use and Benefits of Modern Teaching Methods in Secondary School

Secondary education is the system of education offered to children that has successfully completed their primary school curricular and co-curricular activities. In particular, it is the education meant for children between 11⁺ to 17⁺ (FGN, 1998). The objectives for secondary education in Nigeria as stated in the National Policy on Education (2014) are as follows:

- (a) Provide all primary school leavers with the opportunity for education of a higher level, irrespective of sex, or social, religious and ethnic background;
- (b) Offer Diversified curriculum to cater for the differences in talents, opportunities and future roles;
- (c) Provide trained manpower in the applied science, technology and commerce at sub-professional grades;
- (d) Develop and promote Nigerian languages, art and culture in the context of world's cultural heritage;
- (e) Inspire students with a desire for self improvement and achievement of excellence;
- (f) Foster National unity with an emphasis on the common ties that unite us in our diversity;
- (g) Raise a generation of people who can think for themselves, respect the views and feelings of others, respect the dignity of labour, appreciate those values specified under our broad national goals and live as good citizens;
- (h) Provide technical knowledge and vocational skills necessary for agriculture, industrial, commercial and economic development.

To inculcate these objectives and/or traits, with specific reference to sections (g) and (h), into the students at this level in Nigeria and Rivers State particularly, the use of modern teaching methods (21st century teaching skills) in classroom activities within the secondary school system cannot be overemphasized. They can also play a major part in enhancing the academic abilities and competence of the students when meaningfully applied by teachers in the classroom interactions with students. These teaching methods develop in the students higher - order skills that encourage life-long learning and success in academic pursuit or workplace. In view of this, the use and benefits of the collaborative and mobile teaching/learning approaches (modern teaching methods) for this study are been reviewed.

Collaborative Approach

Collaboration is a 21st century method that moves learning from lecture-centred situations to shared ones. This teaching approach involves mutual reasoning among students or between the students and teachers. In most cases where collaborative learning situation is adopted, students work in set of two or more, collectively seeking for understanding, solutions, or meanings, or creating a result. The collaborative learning environment challenges learners to express and defend their positions, and based on reflection create their individual ideas. This approach is particularly appealing in the sense that all members of the group are responsible for teaching their peers and managing questions and clarifications. In other words, and according to Srinivas, as cited in Laal, Laal and Khattami-Kermanshahi (2012), students are responsible for each other's learning as well as their own.

According to Okeke and Ordu (2018), the idea of using collaborative learning in teaching and learning process is relied on the premise that knowledge is a social construct. They opined that collaborative learning also known as active learning is a method that changes that traditional lecture or teacher centred classroom into a students' centered classroom. In addition, a peer learning or peer instruction is a type of collaborative learning that permits students to work in smaller groups to talk about ideas or proffer solution to problems while the teacher functions as a facilitator. Collaborative learning was planned on the fact that interactivity and collaboration in small groups offer strong solution that would have not been reached individually and encourages sharing of research for enhanced learning (Okeke & Ordu, 2018).

The benefits of this approach when integrated into classroom learning situations include: it enables the students to;

- i. develop ability to execute task in groups,

- ii. work out difficult problems, and
- iii. find solution to other circumstances being made possible through knowledge gained from lesson or task taught (Barron & Darling-Hammond, 2008).
- iv. make learning attractive and desirable by reducing anxiety that always arise from the examination and grave analysis of intricate situations.
- v. retention, more engagement in learning practice and transfer of knowledge (Okeke & Ordu, 2018).

Also, when teachers use this approach in teaching, students freely think and even differ, with a mindset to create new knowledge. It trains students for real-life social and employment situations and is student-centred. Researchers have further shown that students profit from group interactions as they differ in points of view and diverse backgrounds. It teaches learners to monitor each other, detect errors and discover means of correcting their mistakes.

The three major elements of collaborative teaching method are intentional design of objectives and strategies, working together of group members and meaningful learning. These three prongs and benefits of collaborative instructional approach clearly reveal that the problems or challenges of stocking students in overcrowded classroom without proper attention and teachers' authoritarianism including less regards for age and ability differences that hamper meaningful learning and attainment of ideal cognitive, affective and psychomotive skills can be alleviated through this approach if efficiently used by teachers in our secondary schools. Furthermore, Wigg (2011) and Bloom (2009) showed that collaborative learning improves the performance of students.

Mobile Technology Approach

This simply refers to the application of mobile devices like iPad, Smartphone and other Tablets in classroom instructional situations. This method is also called m_ learning. Stevens and Kitchenham (2011) described m_Learning as "meaningful learning that occurs through the use of wireless handheld devices such as cell phone, personal digital assistant, mini-computer, or iPod". The term M-learning gives the notion on the idea of taking courses over the phone or any other mobile devices. However, the proliferation of mobile technologies such as mobile phones has now turned them into important tools to complement the formal and informal learning (Adedaja, Botha and Ogunleye (2012).

In other words, mobile phones have been accompanied by a growing interest in the educational benefits and applications they offer (Botha, Cronje & Ford, 2007). Mobile devices can now be used to support learning anywhere and anytime, to support social learning and knowledge sharing, and also to visualize augmented reality applications for learning purposes. Meanwhile, the embrace of these applications by teachers has remain a great change as demands understanding many different procedures; processes, platforms, and services; updating their knowledge in new programming languages; and manipulating diverse hardware sensors and drivers (Martin, Diaz, Plaza, Ruiz, Castro & Peire, 2011). Mobile devices have become an almost essential part of daily life since their rapid growth in popularity in the late 1990s (Ling, 2004). Similarly, the adoption of mobile devices has to a reasonable extent made learning no longer confined to the four walls of the classroom only and unrestricted time for learning prevails due to the fact that the teachers and students can have access to course content of the subject matter from anywhere. Also, students can interact with teachers, other classmates and any person else to persuade their need for knowledge using the new modern form of mobile devices like digital media players (iPods), Smartphones (Android phone), personal digital assistants (PDAs), and tablet computers (iPads).

According to Vavoula and Sharples (2009), mobile approach or method also refers to as m_Learning can help students to construct spontaneous learning situation by discussing knowledge and implications through interface with system, people and technology as they progress through daily life. Using mobile devices to teach students will benefit in all levels of education by increasing enrolment and leading to an increased student population, because learners in various age brackets will have opportunity to access course materials anywhere and anytime (Lowenthal, 2010). Educase (2011) asserted that:

"Contrary to other types of learning activities, the teaching and learning process (TLP) with mobile

devices began with the assumption that students are always on the go and have activities according to the context in which they are. Mobile applications help coordinate learning resources and students, and may also help to improve the educational activities that are part of this process”.

‘Mobile learning underlines that incorporating learning with life and work will make education to be attained at anytime and anywhere without seeing it as a peculiar activity which must be carried out only in a school, university or other establishment’(IITE Policy brief). According to Adedoja, Botha and Ogunleye (2012), the mobile devices enable the participation in instant chats, which could allow students to chat with support staffs or the teachers. Also, the integration of mobile learning approach in learning activities within or without the classroom provides services for the easy streaming of audio /video contents, free Short Messaging Services and Multimedia services; these allow students to receive and send contents that contain pictures, video/sounds, and as well generate certainty and enthusiasm required for successful teaching and learning (Adedoja, Botha and Ogunleye (2012).

Mobile technology however improves the output and competence of learners as it delivers information and support within a record time and in context for their immediate priorities. Some benefits of mobile technology learning approach include:

- (i) making students have unrestricted access to varieties of information or materials on any subject matters.
- (ii). enabling students to explain, listen and provide feedback or reflect on what they do.
- (iii) helping students to practice higher-level skill such as evaluation and constructive critique.
- (iv) helping students to develop characters such as patience, kindness and encouragement in the classroom and beyond as they share ideas during activities.
- (v) connecting students with peers in other countries and collaborate on projects related to culture, science, social change, and more.
- (vi) creating space that Students can post ideas about the page or give feedback on peer contributions (Major, 2016).

Furthermore, Major (2016) states that teachers can explore for students by age, language, country, and/or class size, and, once paired, the students can converse through video chat, email, and a private workspace on the Internet if mobile approach is adopted.

Using this instructional approach therefore by teachers in the our secondary schools may find solutions to issue of lack of adequate textbooks, inadequate learning facilities such as conducive classrooms, well-equipped libraries, laboratories, and information and communication technology room, trajectory of low achievement, inflexible learning arrangement and teacher-centred approaches that tempt to be factors militating against meaningful teaching-learning processes and resulting in poor academic performances of students.

Review of Empirical Studies

Knežević and Kovacevic (2010) conducted experimental research study on the effects of interactive learning on the development of students’ reading skills in teaching literature. A random sampling technique was used to select 250 students, of which 125 students were in the experimental group and 125 students in the control group. Students of the 9th grade characterized by numerous changes related to: physical growth and development, intellectual development, social development and emotional development were chosen.

After the analysis of the data collected with t – test and comparing the results, the students from the experimental group achieved the average of 2.90 points higher than the same parameter in the control group. This difference was statistically significant at both levels of reliability, 0.05 ($5.986 > 1.96$) and 0.01 ($5.986 > 2.58$) in favour of the experimental group. The result of the study disclosed that the students of experimental group made greater effects in developing competences in teaching literature and indicating that the major effects of the development of students’ competences in teaching literature are expressed through the willingness of students to work with each other; the willingness of students to have equal and reciprocal relationship with other students; the faith of students in their own forces, that is, the students

believe that their own activities are of great benefit to other students and teachers; a great deal of trust and tolerance for their fellow students; and understanding others, consent, compliance with the goals of the group or organization, losing that feelings of fear in the face to face communication.

Yusuf (2011) carried out a study on the effect of cooperative instructional strategy on student's performance in social studies. Quasi – experimental and non-equivalent pre-test and post-test control group design was employed in the study. Two schools in Ilorin metropolis (Kwara state, Nigeria) were selected using sample random sampling technique with ninety-three (93) junior secondary school II students as participant of the study, social study performance test (SSPT) was the main instruction used to illicit information from respondents, and data collected were analyzed using mean gain. Scores to answer the research question one and the student's scores were analyzed using Analysis of Variance (ANCOVA). Findings of the study revealed that there was a significant difference in the performance of students taught with cooperative and conventional instructional strategies in social studies. In the case of gender, there was no significant difference in the performance of male and female students tutored with cooperative instructional strategy in social studies; and the use of cooperative instructional strategy did not produce significant difference in the performance of high medium and low scoring students, but the medium scores gained higher than high and low scorers.

Sheikhi, Zainalipoor and Jamri (2012), conducted a study to compare the effect of cooperative learning with an emphasis of Jigsaw techniques on the academic performance of 2nd grade middles school students in district I of Bomdar Abba city (Iran). The design was pre-test post-test semi-experimental with experimental and control groups. The population of the study includes all male and female students studying at the 2nd grade of middle schools located in district I of Bandar – Abba city in 2010-2011 academic years, totaling 4126 students 1961 girls and 2165 boys. Two schools were randomly selected as sample and two 2nd grade classes were selected in each school, one was the experimental group and the other was the control group. The sample was 153 students (89 were girls and 64 were boys). The Jigsaw model of cooperative learning method was applied to experimental group and the traditional method of instruction was applied for the control group. The hypotheses were tested using Analysis of Covariance (ANCOVA). The result of the study pointed out that cooperative learning with an emphasis on Jigsaw II has significantly increased the scores gained by the experimental group as compared with the control group and therefore, he researchers concluded that Jigsaw has been effective in the academic performance of the students.

Bilesanmi-Awoderu and Idowu (2012) investigated the effectiveness of cooperative learning strategies on Nigerian Junior Secondary students' academic achievement in basic science. The study used quasi experimental pretest – posttest – delayed posttest control group design. The sample size consisted of 120 students drawn from the intact classes of the three selected Junior Secondary Schools in South-west Nigeria. The cooperative learning strategies (learning together and jigsaw II) and conventional lecture method, which was the control group were the treatment groups. The descriptive statistics and Analysis of Covariance (ANCOVA) were used to analyze the data collected. Multiple Classification Analysis (MCA) was also adopted to establish the size of the mean achievement scores of students exposed to the different treatment conditions. The results of this study showed that students in the two cooperative learning strategies (Learning Together and Jigsaw II) groups got higher immediate and delayed academic achievement mean scores than the students in the conventional-lecture group. Learning together and Jigsaw II cooperative teaching strategies were found to be more effective in enhancing students' academic achievement and retention in basic science more than the conventional-lecture.

Samuel and John (2004) examined how the cooperative class experiment (CCE) teaching methods affect students' achievement in Chemistry. The study found that cooperative class experiment method facilitated students' chemistry learning more than regular methods. The study of Andreas et al. (2006) confirmed the efficacy of cooperative learning in the teaching and learning process. They explored the effectiveness of cooperative learning approach, where students work together and elaborate concepts of physics. The results indicated that students in cooperative learning group performed better than their colleagues in the control group. Similarly, Burcinand Leman (2007) examined the effect of cooperative learning on ninth grade students' understanding of metallic bonding, the results of the students't-test indicated that the

mean score of the students in cooperative learning group was significantly higher than the mean score of their colleagues in control group.

The current study is related to the above studies as they concentrate on the effectiveness of collaborative (cooperative) learning on students' academic successes. On the contrary, the reviewed studies centred more on the effect of collaborative learning on students' academic achievements in specific subject when compared with traditional teaching method conducted in different states or countries while the present study tries to investigate the impact of collaborative on students' academic performance if used in instructional activities as affecting all secondary school subjects in Rivers State.

Muhammed, Umaru and Ahmed (2016) conducted a study in investigating the influence of mobile phone usage on academic performance among secondary school students in Jalingo, Taraba State, Nigeria. A stratified sampling technique was used to select 300 respondents from the total population of 6,482 respondents. The descriptive survey design was adopted for the study. The inferential statistical tools used for the analyses of the hypotheses were t-test and ANOVA. The results of this study revealed that the academic performance among the male and female senior secondary school students ($t = 6.113$, $P = 0.02$) was significantly influenced by mobile phone usage but age difference was not a significant factor in mobile phone usage on academic performance among senior secondary school students ($f = 6.431$, $P = 0.022$). Also, parent's occupation was noticed not to be a significant factor in mobile phone usage on academic performance among senior secondary school students ($f = 9.005$, $p = 0.031$) and that the regularity of using mobile phone does not significantly influence academic performance among male and female senior secondary school students ($t = 8.131$, $p = 0.02$).

Soyemi, Oloruntoba and Okafor (2015) investigated the phone usage and the effects internet enabled mobile phones have on the academic performance of students at the tertiary institutions: Federal Polytechnic students of Ilaro, Ogun State in Nigeria were used as a case study. The correlation design was adopted for the study. A sample of 45 students was also used for the study. Two instruments namely; structured questionnaires and interviews were utilized for data collection. The result of the study showed that the use of mobile phone negatively influenced students to a great extent because their attention centred on chatting, music and others making their academic activities to be neglected and left to suffer. It also indicated that the mobile phone usage was out of control among students resulting in poor academic performance among them.

Enyi, Uko, Jairus *et al* (2017) investigated the influence of mobile phone usage on academic performance among public secondary school students in Oju local government area, Benue State, Nigeria. The sample size consisted of twenty-five (25) teachers and seventy-five (75) students chosen randomly from five (5) selected secondary schools in Oju Local Government Area of Benue State. This study adopted survey design. A simple descriptive statistics; the percentage, was used to analyze the research questions while chi-square was utilized to test the hypotheses. The study showed that the mobile phone usage among secondary school students had a significant relationship with their academic performance in Oju local government area.

In another work, Adeyemo, Adedaja and Adelore (2013) carried out a study on mobile technology: implications of its application on Learning. Qualitative research design was considered for the study. A sample of two hundred and one (201) students was drawn from the faculties of Arts and Education of Distance Learning Centre of University of Ibadan. The sample was also stratified into twenty-five (25) groups with the groups having a minimum of five (5) and maximum of ten (10) members; all in the third year of the distance-learning program. For this study, the answers of the students (respondents) were measured along the line of their perceived usefulness, perceived ease of use, perceived benefits and perceived problems of mobile technology for learning which they were exposed to. The result of this study, among other things, showed that mobile technology, particularly mobile phone, its usage in learning made learning become easier and more interesting. It has been able to bridge the divide of time and space, that is, the abnormality of the erstwhile formal mode of learning. Irrespective of these benefits, the study also found that mobile phone use for learning has its peculiar challenges or problems as experienced by learners in the Distance Learning Programme of the University of Ibadan.

The present study is related to the above reviewed studies because they are aimed at studying the effect of

mobile phone usage on academic performance among students, perceived in nature and used descriptive survey designs. They differ on the ground that the Soyemi's, and Adeyemo's studies centred on tertiary students; the Muhammed's and Enyi's studies were carried out in Jalingo, Taraba State and Oju in Benue State respectively even though they affect secondary school students but the current research work was conducted in Port Harcourt Metropolis, Rivers State.

METHODOLOGY

The study used the descriptive survey research design. The study was conducted in Senior Secondary Schools in Port Harcourt Metropolis of Rivers State, Nigeria. The target population for the study consists of 7, 488 senior secondary school students and 2,019 teachers in the 26 public secondary schools in Port Harcourt Metropolis which consists of Obio/Akpor and Port Harcourt Local Government Areas in the Rivers East and Rivers West senatorial districts of Rivers State. A sample of 630 senior secondary school students and 280 teachers was chosen from 14 public secondary schools in the Port Harcourt Metropolis. The 630 senior secondary school students were selected through stratified sampling technique while purposive sampling technique was used to choose the 280 teachers who have teaching experience from 10 - years and above. Also, the 14 out of the 26 public secondary schools in the Metropolis were purposively selected. A self structured questionnaire titled "Influence of Modern Teaching Methods on Academic Performance Questionnaire (IMTMAPQ)" formatted on 4-point Likert rating Scale of very high extent (VHE), high extent (HE), low extent (LE), and very low extent (VLE). Five (5) research questions which consisted of twenty-eight (28) questionnaire items were designed for collection of data and five (5) hypotheses were formulated to guide this study. To ensure the instrument measures what it is supposed to measure and how much the measure represents every single element of the constructs, it was given to two experts (Lecturers) in Measurement and Evaluation Department of the Rivers State University, Port Harcourt. The reliability of the instrument was established through test-re-test method to a group of senior secondary school students and teachers from Comprehensive High School, Alesa and Government Secondary School, Onne outside the study area. The two scores were correlated using Pearson Product Moment Correlation (PPMC) which the coefficient of reliability yielded an index of 0.83 and considered as an acceptable reliability value for this study. A total of 910 copies of the questionnaires were administered to the students and teachers in the 14 selected public secondary schools. However, 568 questionnaires, representing ninety percentages (90%), were retrieved from the students out of the 630 copies distributed after several visits to the affected schools for collection and all the 280 questionnaires administered to the teachers were collected from them. The data collected from the respondents were tested using mean and standard deviation for the research questions while z-test at 0.05 level of significance was used in testing the five null hypotheses of this study. Decision Rule: To answer the research questions, the criterion mean score of 2.50 was used as the benchmark for taking decision on the responses of the respondents while the null hypotheses would be rejected if the test statistics (z - calculated value) is greater than the z - critical value of 1.96 or less than -1.96.

RESULTS

Research question 1

To what extent does the use of collaborative approach in teaching/learning process influence academic performance among secondary school students in Port Harcourt Metropolis?

Table 4.1: Mean Ratings of Respondents on Collaborative Learning Approach in Teaching and Academic Performance.

S/N	ITEMS	Students = 560			Teachers = 280		
		\bar{X}	SD	Remarks	\bar{X}	SD	Remarks
1.	Reduced teacher's authoritarianism promotes fruitful class discussions and maximum application of students' abilities which enhance academic performance.	2.85	0.92	HE	3.03	0.90	HE
2.	A good student-teacher relationship in the classroom supports student personal academic performance.	2.81	0.96	HE	2.69	1.04	HE
3.	Students perform well in class as they take control over their study and highly motivated.	3.27	0.80	HE	3.23	0.87	HE
4.	Teachers allowing students to work together reduces lack of self-discipline and self-confidence which hinder students' academic performance.	2.88	0.94	HE	2.97	0.88	HE
5.	Learning in small-peer group enhances students' concentration and improves their academic performance as against noisy and overcrowded classroom.	2.97	0.87	HE	2.94	0.96	HE
6.	Students build safe, positive learning climate of inquiry which promotes academic excellence when they learn in group.	2.96	1.00	HE	3.10	0.92	HE
Grand Mean and Standard Deviation(SD)		2.96	0.92	HE	2.99	0.94	HE

Source: Field Work 2018

The Table 4.1 revealed that when students have control over their work causes high academic performance with mean score of 3.25 and less teacher's authoritarianism, good student-teacher relationship and reduced lack of self-discipline and self-confidence, learning in small-peer group and positive learning climate of inquiry cause less high academic performance with mean scores of 2.94, 2.75, 2.93, 2.96 and 2.93 respectively. The various mean scores were accepted with a grand mean of 2.98 (above 2.50 mean criterion) showing that the use of collaborative approach leads to high academic performance among secondary school students in Port Harcourt Metropolis.

Research question 2

To what extent does the use of mobile learning approach in teaching/learning process influence academic performance among secondary school students in Port Harcourt Metropolis?

Table 4.2: Mean Ratings of Respondents on Mobile Learning Approach in Teaching and Academic Performance.

S/N	ITEMS	Students = 560			Teachers = 280		
		\bar{X}	SD	Remarks	\bar{X}	SD	Remarks
7.	Use of mobile device can assist students and teachers to have access to unrestricted varieties of information or materials on any subject matters and improve students' academic performance.	3.31	0.76	HE	3.48	0.66	HE
8.	Students develop character of patience in the classroom and beyond as they share ideas through Internet which supports better academic performance.	3.12	0.92	HE	3.04	0.92	HE
9.	Use of mobile device can cause students to be distracted during teaching-learning process and affects their academic performance.	1.32	0.62	VLE	1.40	0.70	VLE
10.	Teachers' access to information on ways to improve teacher's competence in subject matter, lessons preparation, and effective communication via mobile device enhances students' performance.	3.15	0.69	HE	2.95	0.88	HE
11.	Students and teachers interaction on areas of academic and emotional difficulties outside the classroom through mobile devices can improve the students' academic performance.	3.12	0.90	HE	3.02	0.98	HE
12.	Use of mobile device enables students to learn at anything, anywhere and provides motivated environment for them to perform well Academically.	3.05	1.01	HE	2.93	0.99	HE
13.	Students build up nature of kindness in the learning environment as they share ideas through Internet which enhances better academic performance.	3.34	0.80	HE	3.35	0.88	HE
Grand Mean and Standard Deviation(SD)		2.92	0.81	HE	2.88	1.00	HE

Source: Field Work 2018

The responses of the students and teachers on Table 4.2 showed that unrestricted access to information and materials, developing character of patience, teacher's competence, student-teacher interaction enhanced by use mobile device and building up nature of kindness cause high academic performance with mean scores of 3.40, 3.08, 3.05, 3.07 and 3.35 each while access to learning at anytime, anywhere and motivated environment causes less high academic performance with mean score of 2.99. The mean score of 1.36 on item that the use of mobile device for teaching-learning process can cause distraction, the students and teachers responded that it is to a very low extent. The grand mean of 2.90 (above 2.50 mean criterion) was accepted and showing that the use of mobile learning approach in teaching/learning situation enhances high academic performance among secondary school students in Port Harcourt Metropolis.

Hypothesis 1

There is no significant difference between the mean responses of students and teachers on the extent to which the use of collaborative approach in teaching/learning influence academic performance among secondary school students in Port Harcourt Metropolis.

Table 4.3: z-test Comparison of the Mean Responses of Students and Teachers on the extent the use of Collaborative Learning Approach influences Academic Performance

Respondent	N	Mean(\bar{X})	SD	df	z – cal	z – crit	Remarks
Student	568	2.96	0.92	846	0.44	1.96	Failed to reject
Teacher	280	2.99	0.94				

P > 0.05

The analysis of Table 4.3 indicated that there is no significant difference between the mean responses of students and teachers on the extent the use of collaborative learning approach in teaching/learning process influence academic performance among secondary school students in Port Harcourt Metropolis. The z – test calculated value of 0.44 was less than the z – critical value of 1.96 at 0.05 level of significance. The null hypothesis of no significant difference was accepted. The implication of this is that collaborative learning approach promotes better students’ academic performance.

Hypothesis 2

There is no significant difference between the mean responses of students and teachers on the extent to which the use of mobile learning approach in teaching/learning process influence academic performance among secondary school students in Port Harcourt Metropolis.

Table 4.4: z-test Comparison of the Mean Responses of Students and Teachers on the extent the use of Mobile Learning Approach influences Academic Performance.

Respondent	N	Mean(\bar{X})	SD	df	z – cal	z – crit	Remarks
Student	568	2.92	0.81	846	0.58	1.96	Failed to reject
Teacher	280	2.88	1.00				

P > 0.05

Analysis on Table 4.4 showed that z – critical value of 1.96 was greater than the z – calculated value of 0.58 at 0.05 level of significance. This indicates that the null hypothesis of no significant difference between the mean responses of students and teachers on the extent the use of mobile technology in teaching/learning process influence academic performance among secondary school students in Port Harcourt Metropolis was accepted. This also shows that mobile learning approach makes students to perform academically well.

Summary of Major Findings

1. On research question, to what extent does the use of collaborative approach in teaching/learning process influence academic performance among secondary school students in Port Harcourt Metropolis, findings showed that statement item on students perform well in class as they take control over their study would cause high students' academic performance. The z-calculated value of 0.44 failed to reject the hypothesis that there is no significant difference between the mean perceptions of teachers and students on the extent the use of collaborative approach in teaching/learning process influence academic performance among secondary school students in Port Harcourt Metropolis.
2. On research question, to what extent does the use of mobile technology approach in teaching/learning process influence academic performance among secondary school students in Port Harcourt Metropolis, findings showed that the structured items on use of mobile devices can assist students and teachers to have access to unrestricted varieties of information or materials on any subject matters; and students build up nature of kindness in the learning environment as they share ideas through Internet would enhance high academic performance. The z-calculated value of 0.58 failed to reject the hypothesis that there is no significant difference between the mean perceptions of teachers and students on the extent the use of mobile technology approach in teaching/learning process influence academic performance among secondary school students in Port Harcourt Metropolis.

DISCUSSION OF FINDINGS

Collaborative Approach

The findings on table 4.1 and 4.3 showed that the integration of collaborative teaching-learning approach in the classroom situation improves students' academic performance. When students take control over the study, teacher's authoritarianism is less, and students learn in small-peer group; self-confidence, self-discipline and good student-teacher relationship tend to be built, academic obstacles are overcome and high academic performance attained. This finding agreed with Srinivas, as cited in Laal et al (2012) who stated that collaborative approach enables students to be responsible for each other's learning as well as their own, hence improving on their academic success. Barron and Darling Hammond (2008) asserted that the use of collaborative teaching-learning method helps students to develop ability to work in team, solve complex problems and apply knowledge gained through on lesson or task to other circumstances.

Mobile Technology Approach

Table 4.2 and 4.4 identified and revealed that the use of mobile technology approach via mobile devices in the teaching-learning environment tends to improve academic performance among students in secondary school students in Port Harcourt Metropolis. Its ability to enable students always have access to information and materials from the Internet, develop friendly character traits, exposure to meaningful teaching practices as teacher's competence is facilitated through access to tips on better ways of preparing and presenting lessons including modern teaching methods and students' privilege to learning at anytime, anywhere cause them to perform academically high. The finding agrees with Liu (2010) and West (2013) that mobile learning allows students access to any type of information at anytime and anywhere. Vavoula and Sharples (2009) stated that mobile technology approach helps students to construct spontaneous learning situation and advance through everyday life by negotiating knowledge and meanings through interaction with setting, people and technology. The finding also agreed with the view of Major (2016) that the use of mobile learning enables students to listen and provide feedback or reflect on what they do, practice higher-level skill such as evaluation and constructive critique and as well develop characters like patience, kindness and encouragement in the classroom and beyond as they share ideas during activities.

CONCLUSION

From the findings, modern teaching methods such as collaborative and mobile learning approaches are of importance for high academic performance among secondary school students, both boys and girls. The results showed that there were no significant difference between the mean responses of students and

teachers on the extent the use of the above examined instructional approaches influence academic performance among secondary school students in Port Harcourt Metropolis. This demands that teaching-learning methods that are more of student-centred; facilitate students' access to information and materials on subject matter; and encourage motivated learning environment should be adopted in learning situation for better students' academic outcome.

RECOMMENDATIONS

Based on the findings, the following recommendations were made:

1. Educational curriculum planners should ensure the strategies of collaborative and mobile technology instructional approaches are included in the instructional curriculum of secondary schools.
2. Management of secondary school Board and principals should see to the frequent use of modern teaching methods, especially collaborative and mobile technology instructional approaches, by teachers in the classroom situation.
3. Government should provide facilities that promote active learning environment since these approaches such as collaborative and problem-based learning methods demand flip classrooms.
4. A functional information and communication technology centre (digital room) be established in all secondary schools to motivate the use of mobile learning approach.
5. A motivating reward mechanism should be institutionalized to encourage teachers' de-emphasis on the use of traditional methods of teaching and embrace modern ones.

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