ASSESSMENT OF BIOLOGY STUDENT'S ACADEMIC ACHIEVEMENT ON SUPPORTING TISSUE IN PLANT IN SENIOR SECOINDERY SCHOOL.

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BENIN CITY

JULY 27, 2021.

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A RESEARCH WORK SUBMITTED TO THE DEPARTMENT OF CURRICULUM AND INSTRUCTIONAL TECHNOLOGY, FACULTY OF EDUCATION, UNIVERSITY OF BENIN, BENIN CITY, IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF BACHELOR OF SCIENCE EDUCATION (B.SC. ED), DEGREE IN BIOLOGY.

JULY 27, 2021.

CERTIFICATION

We the undersigned hereby certify that this project work was carried out by SUCCESS C. MAYOMI, a student of the department of curriculum and instructional technology that it is adequate in scope and quality in partial fulfillment of bachelor, of science degree in Biology Education of the University of Benin, Benin City.

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DEDICATION

This research work is dedicated to God the giver of life and inspirations.

Also to my beloved Guide, Mr. and Mrs. Joseph Igwemoh, and my lovely parents Mr. and Mrs. Mayomi Raphael for their love, prayers and financial contributions.

ACKNOLEDGEMENT

I will not hesitate to express my profound gratitude to GOD for His love and for making this project work a reality.

My Profound gratitude also goes to my PARENTS; MR. /MRS. MAYOMI, AND MY LOVELY SIBLINGS for their love moral and financial support throughout my stayed in the university I love you all.

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I wish to express my gratitude to my HOD MRS. J.U. E AGHEDO, and also to MR OSAGIE Kingsley for his support during this research work. My appreciation also goes to the entire members of compellers fellowship, UNIBEN for being a family to me. To my friend and sister, I LOVE YOU ALL, my brother wisdom, thank you so much for being a major support to me, I also wish to acknowledge all the lecturers of this distinguished department, Finally I salute all 2019/2020 Graduates.

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ABSTRACT

The study was carried out to find out the assessment of biology student academic achievement on supporting tissue in plant in senior secondary school.

The procedure used or adopted are sample and sampling techinques, respondents were selected randomly, fifty respondents from each school.

The study aim is to identify and described the assessment of biology student academic achievement on supporting tissue in plant. Assessment of effective teaching is crucial in other for student to reach educational success in and outside the classroom setting, some factors need to be consider which some of them are unqualified biology teacher, poor methods of teaching biology, inadequate supply of biology equiptment, here are also some factors that affects academic achievement performance such as intellectual level, personality, smotivation, interest, study habits, teacher and student relationship. the student's recommend that the ministry of education and principals should give encouragement to student and teacher by supporting activities that lead to adequate teaching and learning such as, seminars, workshop ,should be organized for the student because no educational system can grow above its teacher.

CHAPTER ONE

INTRODUCTION

Background of the Study

The term science has to do with nature; it is derived from the Latin word "scientia" which means knowledge. It is a systematic enterprise that builds and organizes knowledge in the form of testable explanation and predictions about the universe. It can equally be defined as the field of study which tries to describe and understand the nature of the universe in whole or part. According to Hyacinth (2004) science in its broadest scene refers to all human activities involving organized knowledge of natural phenomena. It also refers to a system of acquiring knowledge here system uses observation and experimentation to describe and explain natural phenomena. Science is a great enterprise which nations depend on, in-order to advance technologically. Science therefore, is receiving much emphasis in education because of its significance and relevance to life and society. Biology as a branch of science and the prerequisite subject for many fields of learning contributes immensely to the technological growth of the nation. This includes medicine, forestry, agriculture, biotechnology and nursing. The study of Biology in senior secondary school can equip students with useful concepts, principles and theories that will enable them face the challenges before and after graduation. Biology as one of the science subject is bent in making one to be conversation with the environment he or she lives in

appreciate the meaning of scientific life, to develop unbiased mind and to be intellectually homes with serve as ideal to the future citizen. Fortunately, it is a fact that, Biology is the commonly chosen science subject of most secondary pupils, and are confirmed by the west Africa Examination council (WAEC) record. The term biology is derived from two Greek words “bios” and “logos” which mean life and study respectively. Biology therefore means the study of life or study of living things. According to Parker (2013) biology can be divided into two smaller units like anatomy, morphology, histology, physiology. Parker further stated that the knowledge gained from investigation in biology is applied in various fields for example agriculture, wildlife management, forestry, medicine, genetics and teaching.

According to Stone *et al.,* (2006) biology as a science is defined as a scientific study of living organisms. It is therefore a natural science concerned with the study of life and living organisms, including their structure, function, growth, origin, evolution and taxonomy. It has several branches; including the two big branches of biology which are botany (the study of plants) and zoology (the study of animals), morphology (the study if external structure of living things) physiology (the study of how living things function), Ecology (the study of relationship between living things and their environments), Genetics (the study of how living things inherits characters from their parents) Cell biology (the study of cell structure and functions). According to Okeke, (2000). Students

who did well in biology could have prospects of becoming: Doctors, Nurses, Pharmacists, Dentists, Biology teachers, Medical technologist, Food technologists, Genetic Engineers, Microbiologists, Biochemists, and other science subject.

Biology has its origin from Europe but today all the nations of the world accord priority attention to science and technology in development efforts. The reason for according to such priority attention to science and technology being that it carries the promises of great economic improvement and equally serve as a gateway to national development in the age of fast developing technology, has become necessary for all countries of the world especially the developing ones to organize and improve the teaching of science throughout the school stage. It is through science that we get the fundamental bases to develop technology. Biology often overlaps with other sciences, for example biochemistry with biology and chemistry, Astrobiology with biology and astronomy. Social science such as geography, philosophy, psychology and sociology can also interact with biology, for example in administration of biological resources, developmental biology etc. it is a vast subject containing many subdivisions topics which are five unifying principle that can be said to be fundamental of modern biology.

1. Cells are the basic unit of life
2. Living Organisms consumes and transforms energy

3. Organisms regulate the internal environment to maintain a suitable and constant condition.
4. Genes and the basic unit of heredity
5. New species and inherited characters are the product of evolution. Sub-discipline of biology are recognized on the basis of the scale at which organisms are studied and methods used to study them, Biochemistry examines the rudimentary chemistry of life, molecular biology studies the complex interactions systems of biological molecules; then cellular biology examines the basic building block of all life, which is the cell, physiology examines the physical and chemical functions of the tissue, organs, organ of facts and presentation of information about the natural world. The pace of the development of a given country is always determined by the type of education which operates in that country. What is needed in biology is student involvement in the exploration of important ideas of biology. Here are some factors that point to the importance of biology. The science of biology is mainly studying about life.

   i. It provides an in-depth, scientific understanding of how all living and non-living organisms interact with each other.

   ii. It gives insights on how diverse life forms are for example

Study of the human body, causes of illness, the development of medicines also the study of life has somehow helped in shaping the world. It has also given so many credible and reliable answers that explain why things happen in a more scientific manner.

Reasons why the importance of biology should be known by everyone:

1. To explain the changes of the human bodies.
2. Shapes different careers.
3. Provides answers to large-scale problems.
4. Teaches concept on basic living.
5. Helps in answering the fundamental questions about life.
6. Paves way for scientific investigations.

Statement of the Problem

Biology is one of the core science subjects, which is supposed to be the most interesting subject to students in senior secondary schools. It has been discovered that the effective teaching of biology has been very important. But the rate at which students fails biology in result time's shows that effective learning has not been attained by these students. It is observed that "Many secondary schools, especially the public schools have insufficient competent teachers as well as biological equipment in their different schools". Therefore, there is the need to answer certain questions to re-enforce their effectiveness in teaching**,** given the lofty value placed on the concept plant tissue in biology in

Nigeria, to satisfy the global demand in the field of agriculture for producing more food crops and plant based medicine. It is in urgent to conserve the agricultural, economical, rare and endangered plants. They had high medicinal and ecological impact and should be propagated widely. Plant tissue culture is an important tool to propagate the plants in large scale through the eminent way in the short culture of plants and various parts in the aseptic condition with the concept of totipotency. A special media fortified with inorganic nutrients, vitamins, carbohydrates and environmental factors are added into vitro condition. Cell totipotentiality and cellular plasticity is the major physiological principle behind the plant tissue culture. *Asian J. Biol. Sci, 2018* highlighted some of the problems such as cell plasticity, responses for the division and differentiation capacity of the culture of the cells. The propagation methods should be under the controlled environment, microbial growth, due to improper sterilization and ill procedure. Also, contamination menace in plant tissue, it may be physiological and pathological and contaminants in the culture are bacteria, fungi and yeast. For a successful culture of plant tissue, needs to provide aseptic condition, selection of plant tissue, selection of plant tissue free form microbes, proper sterilization, and appropriate nutrition tissue culture media, taking right measures in the browning and Soniaclonial variation. Hardening in the green house and acclimatization to the field condition, Browning of explant; oxidation of phenols within the tissue leads to browning

of explants. Browning can reduce the capacity of cell division and regeneration of explants. One thing that can be done to reduce browning in vitro cultures is the application of absorbent compounds and antioxidant compounds. (Singh *et al.*, 2018), used antioxidant compounds in the form of a mixture of ascorbic acid + Citric acid + cysteine and succeeded in suppressing the level of browning in the explants. Almost twenty years ago, we are in a period of educational crisis with a wide discrepancy between the instrumental methods used in schools and those verified by research as most effective". One must ask why there is still such as a disconnection between theory and practice when there is even more pressure on teachers to perform than ever before. The biology teachers teaching in senior secondary schools face a challenge in keeping barest of development in teaching and being able to ascertain their potential contributions for the improvement of instrument at the classroom level. These teachers face the challenge of dealing with today's youth who hailer becomes more curious, more sophisticated and more demanding in their approach to learning, thereby complicating the teaching function. Most secondary schools in Nigeria are faced with strategies in improving performance of students in the school. Therefore, the researcher intends to look into various strategies of improving performance for teaching of biology in senior secondary schools

Objectives of the Study

The objective of this study is:

1. To investigate the strategies of improving performance for teaching biology in senior secondary school.

2. Find out facilities and equipment that are used for teacher in teaching biology in senior secondary

3. Identify the extent to which student and teachers have been motivated towards the teaching and learning of biology. ·

Research Questions

The following research questions guided the study.

1. What percentage of biology students passed the test on supporting tissue?

2. What percentage of biology student in the school A and school B performed highly in the test on supporting tissues?

3. What percentage of male and female students in school A and school B performed highly in the test on supporting tissues?

Purpose of the Study

The aims or the purpose of the study is to find out the problem facing teaching of biology in senior secondary schools specifically the study aims at finding out.

1. The extent to which senior secondary schools have qualified biology teacher.

2. To know the number of student that performed highly on supporting tissue.

- To understand the extent to which assessment can aids academic achievement in biology.
- The extent to which teachers' attitude affect the teaching of biology in senior secondary school.

Significance of the Study

All over the country ,there is a consensus of opinion about the fallen standard of education in Nigeria Adebule (2004), and huge investments in the educational sector by government has not reflected on the desired outcome of education .By improving our understanding in this area , teachers, student, curriculum developers ,will better understand which teacher characteristics have the greatest impact on student academic achievement .This will also enable teacher and curriculum developers to design more effective programs to improve student's achievement in plant tissues.

Scope of the Study

This research study focus on teachers, student and curriculum developers in Biology subjects, senior secondary school, it's confined only to the senior Secondary school, biology students and teachers.

Relevance of Biology to Senior Secondary School

1. Biology is the study of how lives evolves, survives and changes.
2. It gives knowledge about the interaction of cell with organs and organism, environment and ecosystem.

3. Teaches how everything is connected in our body in biology.
4. It teaches how various organs and system works on human body.

In biology several content is taught in senior secondary school, some of these concepts are; Reproduction, Adaptation, Growth, cell, tissues, plant tissues, animal tissues and supporting tissues in plant and many more.

Challenges Student Normally Have on Supporting Tissues in Plant

Student experienced difficulties with these tissues type, according to the students themselves, were the nature of the topic, grasping the terminology used, and insufficient teaching time, also in teaching students are sometimes slow to come up with ideals for what to write, the factors that have been shown to influence student achievement can be categorized into three types; school related factor, student related factor and teachers related factors (Dossett and Munoz, 2003). Among these three, teacher related factors especially teacher quality has great deal of attention.

Approaches Applied by a Teacher to Make Student Learn;

1. Encouraging student.
2. Getting students involved.
3. Offering incentive.
4. Draw connection to real life.

Pace *et al.,* (2018) defined plant tissue as a collection of similar cells performing an organized function for the plant. He went further and said each

plant tissue is specialized for a unique purpose, and can be combined with other tissues to create organs such as leaves, flowers, stems and roots. The teaching of biology in schools in State based on the findings, it was concluded that the state has competent biology teachers for effective biology education; and that the state needs to pay more attention to the provisions of instructional resources as these were in short supply in most of the school. It was recommended, among other that training through seminars workshops and conferences should be regularly organized for the teachers to keep them abreast of modern trends. In the science and biology in particular, and that the relevant government agencies in charge of secondary education in the state should pay more attention to the provision of instructional resources in the school to aid in the teaching of biology. The use of instructional resources such as audio visuals becomes a solution to the problem of poor performance in Biology explanation over the years. Student's poor performances and lack of interest in a school subjects including biology are attributed to a number of factors among which are lack of personnel and material resources in the course. Inspite of the relevance of supporting tissues of plants to human and in academics, the teaching of plant tissues becomes increasingly deplorable in senior secondary schools, due to the methods or approaches used. There are many approaches applied by a teacher to make students learn are; communication skills, social skills, Research skills, information literacy, media literacy, teacher as a role model etc. Plant tissue is

considered a difficult concept in biology and so new methods and approaches for teaching plant tissues should be explored to bridge relevance meaning and interest of students for learning the concept or concept in biology.

Plant tissues comes in several forms, vascular, Epidermal ground and meristematic, each type of tissue consist of different types of cells, has different functions and is located in different place. Active teaching approaches that could be used to arouse and stimulate students' interest towards the learning of supporting tissues in plant is using electronic media, these electronic approaches will incorporate practical experiences for student's knowledge when applied accordingly.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

This chapter presents the review of related literature on assessment of biology student academic achievement on supporting tissue in Senior Secondary School in Biology Subject. The review is structured along the following sub heading:

- The Conceptual Framework Problem of teaching biology in Nigeria secondary school
- Teacher's educational qualification.
- Poor method of teaching
- Insufficient supply of biology equipment
- Teacher's personality / quality Theoretical Framework Empirical Framework in Secondary Schools,
- Summary of Reviewed Literature

All people, whether teachers or lecturer's based teaching-learning activities to be carried out in an open rural setting that is free from the boundaries of four walls of a typical classroom. Here, the students get the opportunity to observe and listen much more than what is taught. They can explore many ideas, concepts using the natural setting of field practice area. However, unlike didactic lectures in the classroom, C.B.T is usually not a tightly structured and wise bound activity. There is always some degree of flexibility concerning teaching-learning processes which takes place in a community setting taking

into consideration various barriers for undertaking such activity. Learning is a complex cognitive process that occurs in individuals of all ages. “Meaningful learning” requires an understanding of the various topics and concepts of the subject under study. According to Gasevic *et al.,* (2015), educational technology has gone through three distinct generations of development and now a fourth is emerging. The teaching of biology as a subject in secondary schools is faced with many problems. The poor assessment of academic achievement of students in biology as indicated in the report of WAEC and National Teachers Institute (NTI) as well as the result of state common entrance examination has come a persisted public outcry as regards the falling standard of biology in education. Science subjects are already facing problem, this is mostly in the area of availability of laboratories and other teaching facilities in their right number of students studying science. Biology is very important subject. it has to be given more priority. It enables one to understand himself and his intermediate environment. Nevertheless, the knowledge acquired in Biology subject is applied in many fields as Medicine, Biochemistry, Pharmacy, Microbiology and Agriculture among others. Students’ achievement in Biology subject in Senior Secondary Certificates Examination (SSCE) has been unsatisfactory over many years. Various reasons have been attached to this problem by scholars. Dinah (2013) concluded that, availability of text books, laboratory apparatus and other learning resources contribute significantly to the performance of students’

achievement in Biology examination. He added that, students with positive attitude towards the subject register better performance than those who had a negative attitude. Those with positive attitude are motivates to work hard and this is reflected in the good marks scored in the examination. Suman, (2011) conducted a research on influence of parents' education and parental occupation on academic achievement of students. He concluded that education and occupation of parents positively influence the academic achievement of children. Ogunshola and Adwale, (2012) concluded that education qualification of parents and health status of students are significant factors that affect the assessment of academic performance on students. According to Akinsanya *et al.,* (2014) parents' education has the highest significant influence on the academic achievement of students. This is because the child from educated family has a lot of opportunities to study hard due to his/her access to internet, newspaper, television. They can also teach extra lessons at home. Students raised from an illiterate family have limited access to that. It has been observed that the falling academic standard and the influencing factors include the economic status of the parents. Just having a look at the present economic situation of the country, many poor parents do send their children to go and do pity house hold work before going to school. These children were confused on that they can help their family through that. However, poverty of parents has elastic effects on their children academic works as they lack enough resources and funds to sponsor

their education and good school, good housing facilities, medical care and social welfare services. Ogunshola and Adewale, (2012) in his study says, socio-economic and education background of parents is not significant factors in students' performance. Osuafor and Ofor, (2013) in their research on influence of family background on academic achievement of secondary school Biology students revealed that family structure, parents' occupation and educational level of parents did not have significant influence on students' achievement in biology. Memon *et al.,* (2010) in his study revealed that majority of students whose parents were well educated perform better in matriculation examination as compared to those students whose parents were less educated or illiterate. Manalanga and Awelani, (2014) concluded in their result that the possible factors responsible for the poor performance in Biology 5090 include lack of financial support, lack of equipped libraries, lack of laboratories and Biology textbooks, method of teaching and accessing Biology 5090. Furthermore, practical Biology exam if highly scored improves the KCSE Biology grade. Teachers should be encouraging to assess learners regularly on practical skills. Perhaps, more practical lessons should be availed and documented so that teachers should plan for them and regular inspection to insure the actual order is adhered to (Wabuke, 2013). The problems of students under achievement in biology have been observed by many researchers and viewed in different angles due to its diversity. Cohen (1976) put it that "directly

or indirectly classroom interactions are controlled by the teacher for it is he who promotes particular learning situation through his choice of objective, organization of experience, selection of materials and methods in order to facilitates the students' academic performance. Owino *et al.,* (2014) attached the problem with inadequate supply of teaching and learning resources such as chemicals, charts, apparatus, models, local specimens, laboratories, textbooks, and libraries led to poor performance in Biology. They added that irregularities related to the teacher of Biology such as irregularity in administration of practical, class discussion, teachers not allowing students to ask questions, teachers not giving prompt feedback on assignments or exams, by not making the Biology subject interesting and teachers not conducting demonstration during practical. The above mentioned studies indicate the possible factors responsible for low academic performance of students. In order to improve student's achievement and arouse their interest, students have to be taught biology with hands on and different learning materials so as to enable them acquire the cognitive competence and professionals of biology that they need passing biology. The present study will focus on finding the students' academic achievement level in Biology and also to suggest solutions to the problems of poor academic performance of Biology students. The complexity of the academic performance starts from its conceptualization. Sometimes it is known as school readiness, academic achievement and school performance, but

generally the difference in concepts are only explained by semantics as they are used as synonyms. Conventionally, it has been agreed that academic performance should be used in senior secondary school. We will point out just a few because there is a diversity of definitions.

Several authors agree that academic performance is the result of learning, prompted by the teaching activity by the teacher and produced by the student. From a humanistic approach, Martinez (2007) states that academic performance is "the product given by the estimated way, what a has learned as a result of a process of education or training. For Caballero *et al.,* (2007), On their part, Torres and Rodríguez (2006 quoted by Willcox, 2011) define academic performance as the level of knowledge shown in an area or subject compared to the norm, and it is generally measured using the grade point average.

Academic performance has been defined based on several studies, as described by Guzman (2012). Among others, we have studies from the Research which confirmed that the results of the parents' low-income measured the relationship between ethnicity, reading and biology performance. The project aimed at studying the assessment of biology student's academic achievement (Abbott & Joireman 2001) and the model of French *et al.,* (2005) that show that the result of the GPA (grade point average) is highly correlated with senior secondary school admission.

Cognitive factors best predict academic performance and persistence of biology students. In the model of biology, French *et al.,* (2005) the average grade in secondary school was considered as key factor in the academic performance. Students' motivation toward engineering, along with persistence, clear goals and resilience, was an important aspect too. The models of Kember and Leung, (2006) show that school environment is not the only determinant in the student's learning ability, but also the role of teachers to stimulate the students' interest towards scientific activities. Nieto, (2008) found that academic achievement is a product influenced by many variables, factors and circumstances that should be addressed through research, despite the difficulties in its design and methodological strategy. He also proposes to achieve the so-called middle-range theories in order to develop a broader progressive conceptual framework that promotes consolidation of special theories to obtain hypotheses that can be empirically investigated even further. He points out some advances achieved between the 70s and the mid-2000s referred to research at the level of secondary education, conclusions about the relationship between assessment and academic performance throughout different ages. However, personality factors seem to be good performance predictors for which, as noted by O'Connor and Paunonen, (2007) they should be taken into account when explaining the students' performance. All responsibility for performance shouldn't be attributed only to cognitive factors, Pedagogical Evaluation.

Pedagogical Evaluation is defined as the set of planned procedures which are implemented in the educational process to obtain information necessary to assess the achievement of students' goals. Through its evaluation criteria, academic performance is presented as a level of proficiency or performance seen in certain tasks that the student is able to perform (and they are considered good indicators of the existence of processes or intellectual operations whose achievement is assessed). Conceptual pedagogy proposes the following categories to identify proficiency levels: elemental (contextualization), basic (understanding) and advanced (proficiency). The evaluation of school performance has, in fact, a double interest: on the one hand, it indicates to what extent students achieve their learning for which they direct their main effort; and on the other hand, it provides knowledge about the effectiveness of schooling, since it is not easy for the school to achieve complex and abstract goals - such as acquisition of values, character building, creation of study and work habits, love for culture, etc.

- If it fails, at least it achieves less complicated and more specific goals, such as learning objectives. These type of goals are traditionally required by people involved in education and society (Cano, 2001). Regardless of the categories used to measure performance, it is fair to say that it can be of three types, depending on the type of learning being assessed are cognitive, affective and procedural.

The purpose of assessment of biology student academic achievement in senior secondary school is to:- Achieve an educational goal, learning. In this regard there are several components of the complex unit called performance. They are learning processes promoted by the school that involve the transformation of a given state, into a new state, and they are achieved with the integrity in a different unit with cognitive and structural elements. Performance varies according to circumstances, organic and environmental conditions that determine skills and experiences.

Factors that Affect Academic Performance are:

Intellectual level, personality, motivation, skills, interests, study habits, self-esteem or the teacher-student relationship. When a gap between the academic performance and the student's expected performance occurs, it refers to a diverging performance.

The term science has to do with nature; it is derived from the Latin word scientia which means knowledge. It is a systematic enterprise that builds and organizes knowledge in the form of testable explanation and predictions about the universe. It can equally be defined as the field of study which tries to describe and understand the nature of the universe in whole or part. Science in its broadest scene refers to all human activities involving organized knowledge of natural phenomena. It also refers to a system of acquiring knowledge here system uses observation and experimentation to describe and explain natural

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Effective teaching of biology is a process by which a biology teacher adopt all the possible method used in teaching in the classroom to make sure that students

understand biology and be able to respond positively during assessment or to produce a good result.

Teachers' effectiveness is exhibited in the teaching method, classroom managements, the material as well as the way students are being handled, a good teacher always bear in mind the individual differences of the students while presenting the lesson and frequently check the student's understanding of his or her points to make sure that they are getting of understanding his lesson. This also includes the ability of the teacher to answer question asked by the students, having knowledge about his or her subject matter and ability to show students how to conduct appropriate research. Effective teaching is crucial, in order for students to reach educational success in and outside classroom setting, therefore, there has been some factors militating against effective teaching of biology in senior secondary school which some of them are as follows:

1. Unqualified biology teacher**:** Inappropriate training background of science teachers especially biology teachers and qualification of biology teachers are the major factor that militate against effective teaching of biology because some biology teachers in some senior secondary school did not undergo enough training to enable them get skills, qualities and enough knowledge of the subject matter and how to impact the knowledge to the students.

2. Poor method of teaching biology in senior secondary school: For teaching to be effectives one must use different methods of teaching. According to Eke (2001), teaching is effective if only it produces or yields the desired results, the ability of the teacher to adapt to different situations and produce a desired result in the classroom is a mark of teaching effectiveness. Vennier and Faith (2001) are of the opinion that all the teaching activities are supposed to produce learning, so that test of effective teaching will be amount of learning that occurs, When the following methods are used, teaching of biology can be effective. According to Kim *et al.*, (2015), activity method, inquiry method, and discovery method which elicit student's interests and enhance their level of attainment or comprehension of biology. Activity method the methods that encourage students to participate actively during the lesion while teaching at the same time. Oforkansi *et al.*, (2008) defined activity method as a method whereby the students learn through active involvement rather than being passive or being at the receiving end. According to Ofokansi *et al.,* (2008), discovery means finding out. Exploration, manipulation and experimentation are components scientific enquiry, that help one to discover, this approach demands that the teacher create the problem and allow the pupil/students to find answer for themselves. The author also said that enquiry involve active participation

by the student/pupil rather than transmit a preconceived notion about situations.

3. Inadequate supply of biology equipment: In some schools, many laboratories equipment like microscope, glass tube, Beaker, slide, Bones of vertebrates etc. charts of different animals' development, systems, organs, etc., work book for practical and textbooks are not adequate for the students in learning of biology. Biology is a science subject which is all about practical and also when combined with other science subject one will be able to study courses like medicine, nursing, pharmacy etc. in higher institution. Beauty and Woolnough, (2012) are of the opinion that the obsolete and insufficient teaching of biology in senior secondary schools. They stressed that the teacher may be competent enough and have all the qualities to impact the knowledge to the students but to the obsolete and insufficient availability of biological equipment the aim is defeated. Teachers attitude towards the teaching of biology: the teachers' personalities such as the way the teacher walks, talks, reacts to issues, his/her code of conduct and dressing code has become the major factors which leads to the ineffective teaching of biology. It goes with the saying that the personality of such teacher affects the effective teaching of biology in a great way. Enwieme (2001) continuous to stressed that teachers' personality invariably affect the effectiveness of teaching of

biology. Oforkansi *et al.,* (2008) opinion that personal qualities do not only enhance teaching and learning but also promotes the tone of the school as well as the profession the ways of improving performance for teaching biology in senior secondary school is to carry out the study, three research questions were reviewed in line with the purpose of the study. The questions were administered to the student the study use is survey design. The sample of the study comprise of eighty biology teachers. The frequency count and percentages method were used to analyzed the research questions. The study recommended that the ministry of Education and principals should give encouragement to students and teacher by supporting activities that lead to adequate teaching and learning. Government should organize seminars, workshops for biology student's, principals on the teaching and learning methodology and administration of schools, Teachers are thus, the backbone of any educational system and could be referred to as nation builders. As a result of the important role teacher play in educational enterprises and the influence they have on teaching and learning, it is usually stated that 'no educational system can grow above its teachers'. However, everybody has a complaint against the teaching of biology by teachers in secondary schools. It is dull, boring, difficult and useless from the point of views of the learner. Ogunleye, (2015). The teachers

complain of excessive workload and lack of facilities in the form of aids and equipment. Principals and management complain, 'it is the fault of the teachers who do not make the students put in adequate labor'. These complaints have led consequently to paucity of Biology teachers in schools thereby militating against effective teaching and learning of Biology in schools. Ogunleye, (2015) Biology is one of the subjects taught in the secondary schools and research works discovered that students do hot perform well in external examinations like WAEC, NECO, NABTEB, because of the chalk and talk conventional method used mostly by teachers. The researcher used constructivists' learning strategy in order to improve students' performance in external examinations. Constructivists' strategy is a form of learning which is a term for various small group in which students work together in order to maximize each other's learning (Johnson and Johnson, 2002; 2009). Numerous studies showed on constructivists' learning have shown the promotion of perspectives, positive and more supportive relationships with peers, positive attitudes towards subject area and high self-respect or esteem are learnt. It is a student-centered approach and a total shift from the teacher red conventional or traditional approach of teaching. The teacher is a facilitator in a constructivists' class where classroom activities are organized so that students can interact with and learn from

each other as well as the teacher and the world around them. it is an arrangement in which students work in mixed ability groups and are rewarded on the basis of the success of the group as a whole (Slavin, 2002). The students therefore are able to learn more of what is taught and retain it longer than when the same content is presented in other instructional formats. Constructivists' learning has been found to improve students' performance (Hagen, 2000; increase students' motivation (Paino, 2001), students' social skills and increase students' satisfaction (Lord, 2001). Contrustivists' strategy enables students to interact among themselves, exchange ideas, compete and make use of all the five senses. It is purely students centered and a total departure from the teacher centered conventional method. Furthermore, the alarming rate at which teachers in public schools resign and retire as a result of frustration permeating the teaching fabric coupled with the misplaced priority of successive administration in Nigeria concerning teaching. The need to strengthen biology teaching at the secondary school level appears to be well recognized (Ajewole, 2006; Nwosu and Nzewi, 1997; Ndioho, 2007).

Efforts toward the actualization of this need have essentially focused on four discernable approaches:

- -----improvement of the curriculum.
- designing of various instructional methods and strategies

- Instructional resources and
- Improvement of the quality of the secondary school biology teacher. It would appear there is a consensus among experts in the field of teacher education that focusing on the improvement of the quality of the teacher has a superlative advantage (Shulman, 2000). This is so because the best curriculum and the best instructional method can fail at the hand of an ill prepared teacher. On the contrary, a well groomed teacher is sure to find his bearing even when the other conditions are not as good as they should be. Accordingly, current theories of teacher education tend to emphasize the development of the pre- and in-service knowledge base of the teacher.

Teaching Methods in Biology

In teaching biology there are different methods involved. These methods include:

1. **Lecture method:** is the most convenient and inexpensive method of teaching any subject like biology. It hardly requires the use of scientific apparatus, experiment, and aids materials except for the black board. Lecture method is teacher controlled and information centered approach in which teacher works as a role resource in classroom instruction. In this method, the teacher only does the talking and the student is passive listens. This creates dullness in the classrooms as the interaction between

the pupil and teacher ceases to occur, In the teaching of biology lecture methods is used very frequently. This method is used in order to acquire knowledge and concept. Lecture method mainly focuses on cognitive objectives. The main emphasis of this strategy is the presentation of the content. In this method teachers plans and controls the whole teaching learning process

Principles of Lecture Method

(1) student can learn better through listening.

(2) Through lecture method, the teacher makes an attempt to impart perfect and complete knowledge of the subject or the topic to the students

(3) Subject matter can be correlated with other subjects.

(4) New knowledge is given related to previous knowledge

When to use lecture method

(1) It is used to give an overview of a large unit.

(2) This method is an effective way for motivating pupils and developing their interest in the subject

(3) It is used for supplementing the pupils reading and for clarifying main concepts.

(4) This method helps to save the time of students by providing important information in short time period.

(5) This method is used to provide background.

Steps of the Lecture Method

(1) Preparation for the lecture:

(2) This includes silent points like

- appropriate language and manner of presentation according to the nature of students.
- selection of audio-visual aids and instructional materials.
- planning the motivational technique
- anticipating certain difficulties and problem during the lecture.
- finding suitable solution and alternatives to these barriers to a successful lecture.

2. **Introduction to the Lecture: -** It should be done briefly and if it is executed poorly, it can initially kill off the enthusiasm of the student.
3. **Giving the body of the lecture: -** The teacher should have a given cognitive framework upon which he relies to achieve a more logical presentation.
4. **Conclusion of the lecture: -** Following technique can be used to wrap up the lecture. summarizing the major points presented, forming generalization, giving implications, it is economical with regard to time, it helps in developing the habit of concentration among the students, It helps in achieving even high order cognitive objectives (i.e.) application, analysis, synthesis. Lecture method presents the subject matter in a

systematic way, it develops good audience habits, through this method, new subject matter can easily be introduced, it enables linkage between previous knowledge with a new one.

Lecture method of teaching is the oldest teaching method applied in educational institution. This teaching method is one-way channel of communication of information. Students' involvement in this teaching method is just to listen and sometimes pen down some notes if necessary during the lecture, combine the information and organized it. One of the problems in this method is to grab the attention of students in class room. Another big problem is that many students in the class cannot follow the theme. Learning has a strong influence on method of teaching. Since this is a teacher-centered method so it provides very little scope for student activity. Student plays a passive role in this method. Individual differences are not taken into consideration Since this is a teacher-centered method so it provides very little scope for student activity. Student plays a passive role in this method of teaching.

Advantages of Lecture Method of Teaching

1. In this teaching method a large amount of the topics can be covered in a single class period.
2. Using of this method exclude the using of any equipment or Lab.
3. Learning material is not required.
4. Student listening skills developed.

5. Logical arrangement of the material in order to present it orally

Disadvantages of Lecture Method of Teaching

1. Psychologically, this method is acceptable because individuals are not alike. Teacher delivers the same lecture to both students without recognizing the individual differences
2. Learning is an active process thus study should encourage to actively participate in the class room instead of just listening to the teacher.
3. Language using in the lecture is above the standard of the students. They are not able get full advantage of the lecture, Lecture are often forgotten by the students soon after while learning is retained if activities are experienced, Attention level is not the same while student listening to the lecture, Learning is not a simple process, the pouring process is educationally not perfect or recommended for secondary level students. At this level it is difficult for student to pick new concepts using lecture method of teaching. They actually are meaningful, active and interesting experiences or activity in the class.
4. cooperative learning: Cooperative learning is a successful teaching strategy in the teaching of biology, it's a process in which small teams, each with students of different levels of ability, use a variety of learning activities to improve their understanding of a subject. Each member of a

team is responsible not only for learning what is taught but also for helping teammates learn, thus creating an atmosphere of achievement.

5. concept mapping is so helpful to learning biology., why aren't we all doing it. Concept mapping is described as a tool that can support and enhance students' learning in biology class rooms especially, on Supporting in plant. Despite such endorsements, the use of concept mapping as a basis for classroom activities in secondary schools does not seem to be widespread.

In summary, ineffective of teaching of biology in senior secondary school could be due to the several reasons such as classroom management, communication, teachers' qualification, supply of biology equipment, teachers' personality, negligence of seminars, and workshop by the teachers of biology, inadequate illustration and practical aspect of biology is another factors, infrastructural facilities and absences of laboratories etc. Factors that may also affects academic performance can also be intellectual level, personality, motivation, study habits, also the teacher student relationship.

CHAPTER THREE

RESEARCH METHODOLOGY

This chapter focuses on the procedures the researcher used to fully execute and carryout the study. It also presented the following:

- Research Design
- Population of the Study
- Sampling Procedure/Techniques
- Research instrument
- Validity of the instrument
- Method of the collection
- Method of Data Analysis.

3.1 Research Design

The design for this descriptive survey design was used for the collection of data for the study.

Population of the Study

The population of the study comprises of 25 teachers and students in each school, that is total of 50 in school A and B school. This population is chosen to enable the researcher understands the assessment of biology student's Academic Achievement on supporting tissues in plants.

Sample Procedure/Techniques

The sampling procedure/techniques use or adopted includes simple Random sample Techniques, Selection of respondents will be done randomly, Fifty (50) respondents from Two (2) schools, Twenty-Five (25) person's or teachers from each school.

Research Instrument

The research instrument adopted for the study was interview tests and questionnaire.

Validity of the Instrument

The validity of the instrument was highlighted in the questionnaire, the supervisor after correction asked the researcher to administer the questionnaire. Therefore, the instrument was improved upon and its validity ensured by the research supervisor.

Method of Data Collection

The data obtained from the questionnaire will be tabulated, to determine the percentage- the data analysis was done by calculating the percentage of the total number of responses to the questionnaire administered.

Methods of Data Analysis

The methods of data analysis used are content analysis. This is one of the most common methods of data analysis. This research method is qualitative and quantitative data and it will be documented information in the form of texts, media and items.

CHAPTER FOUR

PRESENTION OF RESULTS AND DISCUSSION OF FINDINGS

This chapter presents the results and discusses the findings under the following headings:

1. Presentation of results.
2. Discussion of findings.

QUESTION 1: What percentage of biology students passed the test on supporting tissue in plant, in class A and class B?

Table 1: Students Achievement Score in School A and B

SN	SCHOOL A	SCHOOL B
1	50	50
2	30	60
3	30	70
4	30	30
5	40	30
6	30	50
7	50	30
8	60	30
9	50	30

10	30	50
11	50	50
12	60	30
13	50	50
14	60	60
15	30	80
16	30	80
17	60	30
18	80	10
19	90	60
20	80	30

The results in table one shows that 60% of students passed the test on supporting tissue in school A, while 55% of student passed the test on supporting tissue in school B.

QUESTION 2:

What percentage of biology students in school A and school B performed highly in the test on supporting tissue?

Table 2: Percentage Scores of Students in School A and school B

SCHOOL A	SCHOOL B
60%	55%

Results from the table shows that 66% of students in school A, performed highly in the test on supporting tissues in plant, while in school B,55% of students performed highly in the test on supporting tissues.

QUESTION 3:

What percentage of male and female student performed highly in the test on supporting tissues in plant?

Table 3: Percentage of Male and Female Students.

Schools	Male (%)	Female (%)
A	30%	30%
B	20%	35%

The results here show that 30% of male and 30% of female in school A performed highly in the test on supporting tissue in plant, while in school B 20% of male performed highly in the test and 35% female performed highly in the test on supporting tissues.

CHAPTER FIVE

SUMMARY

In summary, ineffective of teaching of biology in senior secondary school could be due to the several reasons such as classroom management, communication, Teachers qualification, supply of biology equipment, teachers' personality, negligence of seminars, and workshop by the teachers of biology, inadequate illustration and practical aspect of biology is another factors, infrastructural facilities and absences of laboratories etc. Factors that may also affects academic performance can also be intellectual level, personality, motivation, study habits, also the teacher student relationship. the effectiveness of teaching of biology. Oforkans, (2008) opined that personal qualities do not only enhance teaching and learning but also promotes the tone of the school as well as the profession the ways of improving performance for teaching biology in senior secondary school is to carry out the study, three research questions were reviewed in line with the purpose of the study. The questions were administered to the students; the study use is survey design. The sample of the study comprise of two hundred biology teachers. The frequency count and percentages method were used to analyzed the research questions, From the results obtained, it was realized that most of the respondents agreed that Provision of standard classroom will enhance biology students' performance in the selected secondary schools, also Supply of instructional materials e.g. text

books, availability of standard library, Provision of workshop facility for biology teachers. Adequate laboratory, well equipped for practical purposes for the teachers and students. Due to these facts the teachers responded that the provision of all this factors will improve the performance of biology student's in senior secondary schools.

CONCLUSION

The study aimed to identify and describe the assessment of biology student's academic achievement on supporting tissue in plant, in senior secondary school, assessment of effective teaching is crucial, in order for students to reach educational success in and outside the classroom setting, some factors militating against effective teaching of biology in senior secondary school needs to be consider, which some of them are unqualified biology teacher, poor method of teaching biology in senior secondary school also inadequate supply of biology equipment, there are also some factors that affect academic performance assessment such as intellectual level ,personality , motivation, skills, interests, study habits, self-esteem and the teacher student relationship , as described by Guzman, we have studies from the Research which confirmed that the results of the parents' low-income measured the relationship between ethnicity, reading and biology performance which show that the result of the GPA (grade point average) is highly correlated with senior secondary school. . In the model of biology, Immekus & Oakes the average grade in secondary school was

considered as key factor in the academic assessment. Students' motivation toward biology, along with persistence, clear goals and resilience, was an important aspect too. The models of Kember and Leung show that school environment is not the only determinant in the assessment of student's learning ability, but also the role of teachers to stimulate the students' interest towards scientific activities. Nieto found that academic achievement is a product influenced by many variables, factors and circumstances that should be addressed through research, despite the difficulties in its design and methodological strategy. He also proposes to achieve the so-called middle-range theories in order to develop a broader progressive conceptual framework that promotes consolidation of special theories to research at the level of senior secondary school. In Conclusions, self-concept, social origin, verbal comprehension, intellectual ability and preschool are elements that determine assessment of biology in academic achievement performance. the importance of self-concept as a determinant of assessment, followed by issues of great interest such as the importance of preschool, importance of expectations, motivation, emotional factors, anti-authoritarianism Again, self-concept as an element of interest, importance of reading skills, improvement of neuromotor and sensory receptors as determinants of assessment performance, and especially, the need to implement programs of Support and Development of Intelligence. These examples clearly illustrate the diversity of study methods and results that make

it difficult to attempt to draw conclusions about the relationship between assessment and academic performance in biology achievement. However, personality factors seem to be good performance predictors for which, as noted by O'Connor and Paunonen, they should be taken into account when explaining the students' assessment on academic achievement in biology on supporting tissues in plant.

RECOMMENDATIONS

The study recommended that the ministry of Education and principals should give encouragement to students and teacher by supporting activities that lead to adequate teaching and learning. Government should organize seminars, workshops for biology student's, principals on the teaching and learning methodology and administration of schools, Teachers are thus, the backbone of any educational system and could be referred to as nation builders. As a result of the important role teachers play in educational enterprises and the influence they have on teaching and learning, it is usually stated that 'no educational system can grow above its teachers'. However, everybody has a complaint against the teaching of Biology by teachers in secondary schools.

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APPENDIX

FACULTY: Faculty of Education
DEPARTMENT: Curriculum and Instructional Technology
LEVEL: 400L

SECTION A
INTRODUCTION:
This study is carried out to ascertain why assessment in Academic Achievement approach in effective teaching and learning of supporting tissues in plants, in Senior Secondary School as a course in academic achievement.

SEX OF STUDENTS: Male ☐ Female ☐

SECTION B
Tick the correct option

1. The following are functions of supporting tissues in plants except
   (a) Rigidity (b) Flexibility (c) Strengthening (d) Secretory

2. Which of the following structures is not present in the vascular bundles of a dicot stem?
   (a) Xylem (b) Phloem (c) Intra-Fascicular cambium (d) Inter-Fascicular

3. Which of the following plant parts does not perform supportive function?
   (a) Parenchyma, Xylem, Collenchyma
   (b) Epidermis, Sclerenchyma, Xylem
   (c) Parenchyma, Collenchyma, Sclerenchyma
   (d) Sclerenchyma, Xylem, Collenchyma

4. Which of the following factors is likely to increase the rate of transportation in plants?
   (a) A reduction in the number of stomata per unit surface area
   (b) Increase in humidity around the leaves of the plant
   (c) An increase in leaf surface area to volume rate
   (d) Removal of leaves from plants

5. Which of the following sequence is the correct arrangement of tissues in the anatomy of a young dicotyledonous stem from the inside to the outside?

(a) Pith, Phloem, Cambium, Xylem, Parenchyma, Collenchyma, Epidermis

(b) Xylem, Phloem, Cambium, Cortex Endodermis, Collenchyma ad Epidermis

(c) Pith, Xylem, Cambium, Phloem, Collenchyma, Parenchyma and Epidermis

(d) Phloem, Xylem, Cambium, Cortex Endodermis, Collenchyma and Endodermis

6. The following organisms are pests of plants except?

(a) Birds

(b) Nematodes

(c) Bacteria

(d) Rodents

7. Which of the following tissue does not provide support in flowering plants?

(a) Collenchyma

(b) Parenchyma

(c) Xylem

(d) Phloem

8. Which of the following is a tissue?

(a) Volvox

(b) Chlamadominas

(c) Epidermis

(d) Paramecium

9. Which of the following phenomena affects plant growth in an alkaline soil?

(a)Excessive plasmolysis

(b)Excessive transportation

(c)Excessive sunlight

(d)Poor drainage

10. Older parts of plant roots do not normally absorb water because?

(a)They lack Xylem

(b)They have small surface area

(c)The phloem is dead

(d) They lack roots