A SURVEY OF METHODS OF TEACHING BIOLOGY IN SENIOR SECONDARY SCHOOLS IN BENIN CITY

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BENIN CITY

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A RESEARCH PROJECT SUBMITTED TO THE DEPARTMENT OF CURRICULUM AND INSTRUCTIONAL TECHNOLOGY, FACULTY OF EDUCATION, UNIVERSITY OF BENIN, BENIN CITY

IN PARTIAL FULFILLMENT FOR THE AWARD OF BACHELOR IN SCIENCE (ED) DEGREE IN BIOLOGY

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CERTIFICATION

We the undersigned certify that the research work was carried out by **Victory Ashimeje OLOGUN** in the Department of Curriculum and Instructional Technology, Faculty of Education, University of Benin, Benin City, in partial fulfillment of the requirement for the award of Bachelor of Science B.Sc (Ed) degree in Biology.

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DEDICATION

This research work is dedicated to the Almighty God for His enabling grace, love, mercy, protection, guidance and provision throughout my academic pursuit.

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ABSTRACT

The study Surveyed the Methods of teaching Biology in senior secondary schools in Benin City. Three (3) research questions were raised to guide the study. The study adopted the descriptive survey research design. The population of the study consisted of five thousand six hundred and seventy eight (5,678) students in Benin City. Two hundred (200) students formed the sample of the study. They were randomly sampled to ensure fair representation.

The instrument that was used for this study was a questionnaire titled, 'Questionnaire on Survey of Methods of Teaching Biology in Senior Secondary Schools' (QSMTB r=.82). Data obtained from the instrument were analyzed using frequency count, simple percentage, mean and standard deviation.

Findings from the study revealed that Lecture, Discussion and Demonstration methods are the methods used by Biology teachers in teaching. Students perceive their Biology teachers' teaching method as a factor affecting their interest to learn the subject. Students perceive their Biology teachers' teaching method as a factor affecting their academic performance in the subject. Based on the findings of the study, it is recommended that teachers should use more of learner- centred methods rather than teacher- centred methods of teaching.

CHAPTER ONE

INTRODUCTION

Background of the Study

Science as a field of study has made it possible for man to know more about the universe. Science and technology has proved significantly useful in man's daily struggle to control his immediate environment and build a virile world. Jegede and Brown (2008) observed that sound national development emanates mainly from the areas of science and technology. The effective teaching of science subjects can lead to the attainment of scientific and technological greatness (Adesoji & Olatunbosun, 2008). Science teachers are very crucial in the translation of science educational objectives into practice. Science education provides a more effective preparation for citizenship and in order to achieve this, qualified and experienced science teachers who are well aware of global demands of science teaching with a view to engendering scientific and technological values in learners are required.

One of the science subjects in the Senior Secondary School curriculum is Biology. Biology occupies a unique position in the school curriculum as it is essential for nation building and scientific and technological development. Biology is central to many science-related courses such as Medicine, Pharmacy, Nursing, Agriculture, Zoology, Botany, Genetics, Physiology, Anatomy, Molecular Biology, Biochemistry and Microbiology among others. It is obvious that no student intending to study these disciplines can do without Biology. However, results have shown that students' performance in Biology has continued to be poor especially in external examinations (Ogunleye, 2006; Osuafor & Okonkwo, 2013). Okoro (2011) observed that for

some years, the percentage of students who obtained credit pass in Biology in the West African Senior School Certificate Examination (WASSCE) in Nigeria has been low and their performance is poor. Teaching methods seem to have occupied top positions as factors affecting students' performance. Frequent use of Teacher- centered methods (for example, lecture alone can affect children's performance in academics negatively especially in science). For instance, the West African Examinations Council (WAEC) Chief Examiners' Report (2019) reveals that students' performance in Biology was poor due to their inadequate exposure to practical work. These factors amongst others have drawn the attention of researchers towards the way the subject is taught. Hence, a research to examine the different methods teachers adopt in teaching Biology.

Teachers stand as facilitators of knowledge, values and skills in the learning process. If the teacher is ineffective, students under the teacher's tutelage will achieve inadequate progress academically. Teachers cannot be dissociated from the schools where they teach and the academic results of the school because teaching and learning depends on teachers. No wonder, an effective teacher has been conceptualized as one who produces desired results in the course of study as a teacher (Uchenna, 2012). Teacher quality is directly proportional to students' performance. This implies that teachers' role in the preparation of students to succeed cannot be undermined.

In order to be effective, a teacher must choose the right teaching method or methods. A teaching method comprises the principles, pedagogy and management strategies used by teachers to enable students learning. It is the primary role of teachers to pass knowledge and information

onto their students. There are several ways of passing information to students which include lecturing, cooperative learning, concept mapping, discussion, reading and others.

The study of Biology involves both practical and theoretical work. Biological practical according to Ndioho (2007) is any learning experience which involves students in activities such as observation, counting, experimenting, recording and carrying out field work. These activities are in addition to listening to talk and taking down notes from such talk.

Statement of the Problem

Biology is one of the core science subjects in the senior secondary school curriculum. However, results have shown that students perform poorly in the subject in external examinations. One cause of this problem could be attributed to teaching method. Hence, this study investigated the methods of teaching Biology in secondary schools in Benin City, Edo State, Nigeria.

Research Questions

1. What is the dominant method of teaching Biology in the Senior Secondary Schools?
2. What is students' perception of the effect of their Biology teachers' teaching methods on their interest to study Biology?
3. What is students' perception of the effect of their Biology teachers' teaching method on their academic performance?

Purpose of the Study

The general purpose of this study is to carry out a survey on the teaching methods used by Biology teachers in senior secondary school in Benin city. Specifically, the study sought to:

1. Determine the dominant method of teaching Biology in senior secondary schools.
2. Ascertain students' perception of the effect of their Biology teachers' teaching method in their interest to study Biology.
3. Find out how students' perceive the effect of their Biology teachers' teaching method on their academic performance.

Significance of the Study

The outcome of this study would be beneficial to students, teachers, textbook writers and others. The result of the study, it is hoped would be beneficial to Biology teachers as it would provide information on how their students' perceive their teaching methods in terms of interest to study Biology and academic performance. Hopefully, this would cause the teachers to make adjustments/ improvements where necessary.

In addition, the findings of the study would prove beneficial to students. The actions taken by their teachers and other relevant stakeholders to improve teaching would help enhance students' interest to learn Biology and their academic performance.

Scope of the Study

The study surveyed the methods of teaching Biology in Senior Secondary Schools in Benin City. The study is restricted to students in SS1, SS11 and SS111.

Definition of Terms

Teaching Methods: This comprises the principles, pedagogy and management strategies used by teachers to enable students learning.

Perception: Is the way in which something is regarded, understood and interpreted.

Academic Performance: This is the measurement of student's achievement.

Interest: The feeling of wanting to know or learn about something or someone.

CHAPTER TWO

REVIEW OF LITERATURE

Related studies to this work were investigated under the following broad headings:

- The Concept of Biology
- Concept of Teaching and Learning
- Methods of Teaching Biology
- Students' Achievement and Interest in Biology
- Summary of Literature Reviewed

The Concept of Biology

Biology is one of the fields in the natural sciences that studies living things. The word Biology is coined from two Greek words; Bios meaning life, and logy (logia) which means study (Ezemoka, 2001). Thus the concept, Biology is concerned with the study of life. Miller and Levine (2002) state that Biology in addition to studying life, studies also the structures, functions, growth, origin, evolutions, distributions, inter-relationships and problems such as diseases and adaptations of living things and proposes solutions where possible. Biology is a branch of science that studies life using inquiry methods and discoveries.

Hence, the North Caroline Standard Course of Study (2004) stated that inquiry and discovery should be the central theme in Biology teaching and learning for students to experience the world of life around them and to actually do Biology as opposed to learning Biology. Some methods of teaching Biology involves asking questions that stimulate students to think critically which enables students to develop scientific knowledge and scientific habit such as curiosity, creativity,

objectively, open mindedness and others that is needed for understanding biological concepts, knowledge construction and knowledge transfer to similar situations. Biology as the science of life provides potentials for the use of many methods.

Concept of Teaching and Learning

Teaching is a concept central to education and any academic setting. There are various definitions of teaching as well as many activities that are involved in the teaching and learning process. Nzeribe (2002) defined teaching as the conscious and deliberate effort by a mature or experienced person to impact information, knowledge, skills and so on to an immature or less experienced person, with the intention that the latter will learn or come to believe what is taught. Teaching can be defined as a systematic activity designed by a teacher or instructor to facilitate learning in order to enable learners construct worthwhile knowledge and skills. Teaching is an academic process that involves two groups of people: the teacher/instructor and students/learners and information which include knowledge and like that are transmitted. Due to these activities involved in teaching the concept of teaching are preferably discussed as teaching and learning.

According to Sawa (2002) teaching and learning are considered as two sides of a coin, because teaching is meaningless without learning. Hence, teaching without learning is considered mere talking. For teaching to be meaningful, it must be effective in promoting knowledge skills and values. In view of this, document by Shawnee State University (2001) stated that the accepted criterion for measuring good teaching is the amount of learning outcomes demonstrated by the school age learners and also through the perspective of learners' engagement in the teaching and learning process. Shawnee State University (2001) therefore characterized effective teaching as:

(a) teaching for understanding; teaching in ways that help learners understand ideas and perform proficiently and (b) diversified — teaching in ways that would help diverse learners to find productive path to knowledge. Also Borich (2008) stated that an effective teaching and learning should:

1) Be inquiry-based: teachers should build the subject program around inquiry process by (a) selecting content and adapting curricula to address students learning needs, interests and prior knowledge. (b) Developing activities and assessments that promote students' depth of understanding. (c) working together as colleague across disciplines and class levels.
2) Facilitate learning: Teachers should guide and facilitate learning with a variety of strategies such as (a) Helping students focus their inquiries and ideas (b) orchestrating student discuss (c) requiring students to share responsibility for their own learning (d) modelling curiosity, skepticism and the skills of inquiry.
3) Provide learning environment: Teachers should create and manage learning environments that (a) provide enough time for extended inquiries (b) are safe but flexible and supportive of students activities and actions. (c)features materials and tools for doing and use of resources outside school.
4) Create classroom community: Teachers should develop communities of learner in which all members (a) respect the ideas and diverse experience of others.

   (b)collaborate and make decisions about the contents and context of their work.

(c)adopt the intellectual rigor and attitudes that make learning possible. (d) engage in on-going formal and informal discussion.

5) Be on-going assessment: Teachers should engage in on-going, assessment of instruction and learning by (a) using multiple methods to determine students understandings (b) guiding students in self-assessment (c) using assessment information to guide their teaching and improve their practice.

From the preceding assertions, an effective pedagogy is that which engages students actively in the teaching and learning process and guides students successfully through exploration to become creative and critical thinkers as well as problem solvers. Effective teaching encourages students to grapple with the ideas which they need to develop their own understandings and construct meaningful knowledge. Pedagogy with these inherent qualities includes inquiry method of teaching. Inquiry as an effective method for teaching Biology encourages questioning or seeking for information about phenomena; it fosters and encourages scientific processes such as:

Observation — Observing matters or phenomena

Measurement — Quantitative description of objects and phenomena Experimentation — Testing questions and ideas

Communication — communicating results to the scientific community and the public. Inquiry involves mental processes — such as inductive reasoning, formulating hypothesis and theories, deductive reasoning, analogy, extrapolation, synthesis and evaluation which are needed in various activities in the teaching and learning of biological concepts. The secondary school

Biology curriculum involves a wide range of inquiry activities which may need guided or unguided inquiry methods.

Methods of Teaching Biology

Teaching is a process of impacting knowledge which involves many activities on the part of the teacher and the learners (students). Teaching methods therefore includes these various means and activities of the teacher and learner in the learning process geared towards acquiring ideas, knowledge, skills and values that are built within the educational aims and Objectives. Teaching methods can be asserted as primarily the description of learning, objective-oriented activities and the flow of information between teacher and students in the teaching and learning processes.

Teaching methods involves different techniques and the methods to be used depends largely on the information or skill that is being taught and it may also be influenced by the aptitude and enthusiasm of the students. The use of techniques vary with different teaching methods and depend on many factors such as type of learning objectives, nature of subject, age of students, number of students, learning environment among others. Hence, there are different teaching methods: Lecture/Expository method, Discussion, Demonstration, Recitation, Lecture/Discussion, Games and Simulations, Problem- solving, Role-play, Scaffolding, Inquiry Learning among others. These different teaching methods are grouped by some educators (Shawnee, State University, 2001; Sawa, 2002); O`Bannon, 2002 and Campbell, 2006) into two approaches:

teacher-centered and student- centered.

Teacher-centered Approach

Teacher-centered approach includes all the teaching methods that the teacher dominates in the lesson procedure and takes the lead in coordinating the classroom activities as regards to what is to be done. Teachers in a teacher-centered environment focus on making relationships with students that are anchored on intellectual exploration of selected materials. They focus more on content than on students. Bannon (2002) stated that teacher-centered approach includes all the teaching methods grounded in behaviourism such as Lecture, Demonstration, Discussion and Recitation. Teacher-centered classroom is thus rigidly structured and only factual information is conveyed to learners. For instance in the Lecture method, the instructor presents fact and principles orally. In view of this, the Lecture method has been criticized to be a poor method of teaching hand-on skills in sciences including Biology although it provides for the effective use of time and manpower especially in presenting ideas to a large group of people. Considering other teacher-centered approaches, O`Bannon (2002) described demonstration as a teaching method that involves the teacher showing students a process or procedure involved in a learning process. The demonstration method has some advantages over the lecture method in skill acquisition. The disadvantage remains that the learners follow the rigidly prescribed procedure by the teacher and this makes it not effective for science teaching. Then the Discussion method among other teacher-centered approach is a more advanced teacher-centered approach in which an issue in the learning content is posed as a question by the teacher and each of the students chips in different ideas. The Discussion method also has its prone and cones with some degrees of student-centeredness as the teacher decide what is to be discussed. However, in all the aforementioned

teaching methods, the teacher determines the content and the questions and takes upper control in the flow of information or knowledge. Hence they are considered as teacher-centered approach to teaching.

The term teacher-centered approach therefore comes from the roles of the teacher in the traditional classroom as possessor of knowledge and decision maker. He/she decides how knowledge should be transferred to learners in the teaching and learning process. Ibe (2004) noted that the traditional teaching methods stress transmission of knowledge in a manner that emphasize and encourage memorization. In line with this view, Guisti (2008) described the approach as one fact laden text consisting of assign, recite, test and then discuss the text procedure. From the foregoing, it indicates that teacher-centered approach includes teaching methods that involves only unidirectional flow of information from the teacher to students and does not permit exchange of ideas that makes the teaching and learning process active. In view of these shortcomings, Isiugo - Abanihe et al. (2010) characterized the traditional methods as poor methods of teaching sciences because it limits science skill acquisition and hands on activities that characterize science teaching and learning. The persistent use of traditional/conventional teaching methods has been reported to account for poor student performance in Biology.

Student-Centered Approach

Student-centered approach include all teaching methods that underscore the teacher as a decision maker and problem solver in the classroom and sees teachers as guides, facilitators, mentors, coach or consultants in the teaching and learning process. In the educational sector, the

term student-centered, child- centered or learner-centered are interchangeably used to refer to teaching methods that allow students to share some degree of responsibility and decision making in the classroom. The student-centered approach is opposed to the teacher- centered approach that characterizes the traditional teaching methods which rests classroom decisions solely on the teachers.

According to O`Bannon (2002), student-centered approach is grounded in constructivism, with the epistemological view that learners are the architects of their own idiosyncratic meanings of concepts and natural phenomena. In view of this, student-centered approach is based on constructivists' principles and ideas. However Campbell (2006) inferred that the cognitive learning theory also advocate for student-centered idea. Thus student-centered approach is based on the constructivists as well as cognitive theories with the educational applications linked to the works of Dewey and Piaget among others. In discussing student-centered teaching methods, such terms like constructivism, inquiry and discovery learning are often interchangeably used. Kirshner (2006 noted that although these terms share some commonalities, experts in each field observe some important differences.

Nevertheless, in today's educational discussions, the term student-centered approach is a broad term that includes all innovative teaching methods that are usually activity oriented, where learners are expected to observe, analyze, synthesize and evaluate ideas or phenomena using materials or previous knowledge. Teaching methods emphasizing this approach include Discovery, constructivism-related method (concept mapping, co-operative learning), problem

solving, graphic organizers, know what to learn (KWL), role play, simulations and games and inquiry method among others.

The student-centered approach is relevant to Biology teaching because in Biology teaching, creating an environment that will encourage students to interact with materials and specimens enables students to construct meaningful knowledge and learn Biology first hand. In view of the relevance of student-centered approach to teaching and learning of Biology many researches in Biology Education: (Ibe & Nwosu 2003; Ibe 2004; Nwagbo 2006 and Opara, 2011) recommend for a shift from the use of traditional teaching methods (teacher-centered approach) of teaching Biology to modern/innovative teaching methods (student-centered approach) such as Inquiry method. Evidences from the above studies also indicated that the Inquiry method of teaching is superior to the traditional teacher-centered approach in improving academic achievement, acquisition of process skills and in promoting scientific literacy among Biology students.

Lecture method is often used to deliver a large amount of information to the students in a short period (Berry, 2008) and it entails a one way flow of communication from the teacher to the students. According to Gehlen-Bauum and Weinberger (2014), lectures are designed to deliver new information to a large group of students. This method is known to be effective in dealing with a large class. However, it could also be used for a small class. Research indicates that this method dominates most of the tertiary institutions (Deslauriers, Schelew & Wieman, 2011).

Research shows that students' retention in a lecture-based science courses is weak. According to Bok (2006), an average student only retains 42% of what he or she learned after the end of the lecture and 20% one week later. Research shows that teaching methods like the lecture method commonly used does not help the students to acquire sufficient functional understanding (Bernhard 2007). Berry (2008) argued that lecture method lacks the effectiveness of an active learning approach. In the opinion of Fagen and Mazur (2003), lecture method causes bad reading habit among students. According to Franklin, Sayre, and Clark (2014), students taught in lecture-based classes learn less than those taught with activity-based reform methods. Lecture method concentrates on information rather than learners (AlRawi, 2013). In the lecture method the teacher tell the students what to do instead of activating them to discover for themselves (Miles, 2015).

Demonstration teaching method is a useful method of teaching because it improves students' understanding and retention (McKee, Williamson & Ruebush, 2007). According to AlRawi (2013), Demonstration is effective in teaching skills of using tools and laboratory experiment in science. However, the time available to perform demonstration is very limited in a classroom setting. Therefore, a demonstration is often designed to allow students to make observations rather than hands-on learning (McKee, Williamson & Ruebush, 2007).

Students' Achievement and Interest in Biology

Achievement is an important educational variable that expresses the success or failure of a teaching and learning process. Campbell (2006) referred to academic achievement as the outcome of a teaching and learning process. It is the extent to which a student, teacher or

institution has achieved their educational goals. Similarly, Adeyemi (2008) described academic achievement as the scholastic standing of a student at a given moment which states individual's intellectual abilities; which can be measured by grades obtained from examinations or continuous assessments (tests or quiz). In Nigeria, the level of students' academic achievement in the senior school secondary school is determined by grades obtained from external examinations such as the Senior School Certificate Examination conducted by external examination bodies like West African Examinations Council and National Examination Council respectively. The pattern of grading candidates score in the examination is such that distinction grades are represented by A1 -B2, credit grades C4-C6, ordinary pass D7-D8 and failure grade F9 (Adeyemi, 2008). A sample of students West African School Certificate Examination result in Biology in the years 2005-2010 indicate that majority of the students obtain grades within the range of D7 — F9. This result indicates poor achievement in Biology since the least requirement for further studies in the tertiary institutions is C6. The poor student achievement in Biology is linked to the use of traditional lecture/expository method in the teaching and learning of Biology (Nwagbo, 2006 and Isiugo¬Abanihe et al., 2010). Unlike achievement which is of the cognitive domain, interest is an education concept that determines some aspects of students' affective domain which is very important in the teaching and learning process. Merriam- Webster's Learner's Dictionary (2011) defined interest as a feeling of wanting to learn more about something or to be involved in something. In education, interest is characterized by increased attention and concentration in classroom and academic activities. It is a motivational variable and an emotionally oriented trait which determines the vigour of the learner in tackling educational activities. Okoro (2011) stated

that interest reflects a central feature in the knowledge value system of a learner, meaning that learners' interests are influenced by the value they have for an activity or knowledge. Interest guides and encourages students to think critically and to keep trying until success is achieved. Interest and achievement co-relate in the teaching and learning process and have intra influence on each other; high interest improves students' achievement while high achievement promotes interest. On the other hand, low interest retards learning and results in poor achievement. Jensen (2008) noted that interest co-relates with intelligence and some factors like teaching methods in determining students' academic achievement. When students lack interest in a subject, it results to poor academic achievement and most often students dropping out from school. Obiekwe (2008) and Okoro (2011) indicated that students' interest and achievement can be influenced by innovative teaching methods such as constructivist instructional approach and interaction learning patterns, while Onan (2011) noted that inquiry teaching method promotes students' interest and achievement in Biology. Similarly, a review of some studies on students' interest in Biology such as Yong (2009) and Nasr and Asghar (2011) indicated that students' interest in Biology can also be influenced by gender.

Studies on Students' Achievement and Interest in Science

Interest inventory on Basic Ecological Previous study by Obiekwe (2008) investigated the effect of constructivist instructional approaches on students' achievement and interest in Basic Ecological concepts in Biology. Results from the study on Interest Inventory on Basic Ecological Concepts indicated that constructivist instructional approach was more effective in facilitating student's interest in Ecological concepts more than the conventional (lecture) method.

In a related study, Yong (2009) investigated students' motivational orientations and their association with achievement in Biology in Brunei Darussalam. Population for the study included 296 grade 11 students from a government secondary schools (142 males and 154 females) randomly selected from science stream classes. Data for the study was collected using Students Motivational orientations in Learning Biology Questionnaire (SMOLQ) adapted from Sideridis (2002) which consisted of seven constructs namely: behavioural intention, behavioural beliefs, outcome evaluation, normative belief, motivation to comply and goal importance. Data collected' from the study were analyzed using Pearson's product-moment correlation. The results obtained showed that behavioural intentions, outcome evaluation and goal importance were significantly correlated with achievement. This indicate that high achievement score is associated with students' interest.

In a similar study on the effect of students' interest on achievement in Biology, Okoro (2011) investigated the effects of interaction pattern on Students' achievement and interest in Biology among secondary school students. Result from the study indicated that the three (3) interaction patterns: co-operative, competitive and individualistic patterns, enhanced students' achievement and interest in Biology.

Nasr (2011) carried out a study on attitude towards Biology and its effects on students' achievement among one hundred and eighty five 185 grade 12 students in Isfahan Azadi, Iran. Data for the study was collected through a questionnaire containing 30 Item based on Simpson-Troost Attitude Questionnaire-Revised (STAQ-R) developed by Owen et al (2008). Data collected from the study were analyzed with statistical software SPSS version 16.00 to determine

the correlation coefficient between motivating Biology class and students' achievement. Result obtained showed that there is no statically significant difference between attitude towards Biology and students achievement but indicated that students' attitude towards Biology can be improved when Biology courses and educational materials in Biology make a fun and interesting atmosphere for students.

Summary of Literature Reviewed

Biological knowledge is an essential element for national and human development. Over the years, the use of ineffective teaching methods in teaching Biology has contributed to the reduction in the number of students that could have opted for biological sciences. In view of these shortcomings, researchers in Biology Education have continued to search for an effective teaching method that would facilitate teaching and learning of Biology to enhance students' achievement and interest in Biology. The persistent search for an effective method of teaching Biology culminated in the identification of inquiry teaching method among other innovative teaching methods (student-centered approach). The inquiry method of teaching emphasizes different degrees of student-centeredness in the teaching and learning process.

Furthermore, the review of related literature has shown that studies for varying the methods of teaching Biology in Secondary Schools in Nigeria are scarce. Hence, this study surveyed the methods used by teachers in teaching Biology in some Senior Secondary Schools in Benin City, Edo State, Nigeria.

CHAPTER THREE

METHODOLOGY

This chapter outlines the procedures employed by the researcher in carrying out this study under the following sub-headings:

- Research Design
- Population of the Study
- Sample and Sampling Techniques
- Research Instrument
- Validity of the Instrument
- Reliability of the Instrument
- Method of Data Collection
- Method of Data Analysis

Research Design

The study made use of the descriptive survey research design.

Population of the Study

The target population of this study comprised five thousand six hundred and seventy eight (5,678) students in the thirteen (13) senior secondary schools in Egor Local Government Area of Edo State (Edo State Ministry of Education, 2020).

Sample and Sampling Techniques

The sample for this study comprises two hundred (200) students drawn from four (4) secondary schools in Egor Local Government Area of Edo State. The simple random sampling technique was used in selecting the sample schools. Fifty (50) students were drawn from each school using the simple random sampling technique, bringing the total number of students sample to two hundred (200).

Research Instrument

The instrument used in generating data for this study is a self-designed questionnaire titled 'Questionnaire on Methods of Teaching Biology in Senior Secondary School in Benin City'. It is made up of four sections (A, B, C and D). Section A covers the personal information of the respondents. Section B contains thirteen (13) items designed to determine the methods of teaching Biology in Senior Secondary Schools. Section C consists of four (4) items intended to determine students' perception of the effect of their Biology teachers' teaching method on their interest to study Biology. Section D consists of four (4) items intended to determine students' perception of the effect of their Biology teachers' teaching method on their academic performance. Sections 'B', 'C' and 'D' are modified Likert-type scales with four options of 'Strongly Agree', 'Agree', 'Disagree' and 'Strongly Disagree'. The questionnaire is scaled thus for positively worded items: Strongly Agree =4, Agree =3, Disagree =2 and Strongly Disagree =1. The reverse is the case for negatively worded items. A score of 2.5 (the average of the scale) was set as the decision maker. When the mean of the responses to an item is greater than or equal to 2.5, the item is accepted and vice versa.

Validity of the Instrument

To determine the validity of the instrument, the drafted copies of the designed instrument was given to the supervisor for face validity. Also two other lecturers in the Faculty of Education read the draft and their suggestions and inputs were embedded in the final draft.

Reliability of the Instrument

To determine the reliability of the instrument, thirty copies of the validated questionnaire were administered to SSII students who were not part of the main study. The data collected was subjected to Cronbach's Alpha statistics and it yielded a reliability coefficient of 0.82 which indicate that the instrument was reliable.

Method of Data Collection

The researcher personally administered two hundred (200) copies of the questionnaire to the respondents in their respective schools and waited to retrieve them back to ensure 100% return rate.

Method of Data Analysis

The data generated from the questionnaire were analyzed using frequency, simple percentage, mean and standard deviation.

CHAPTER FOUR

PRESENTATION OF RESULTS AND DISCUSSION OF FINDINGS

This chapter presents the result of the study and their discussion. The data are presented in tables and arranged according to the order of the research question raised.

Presentation of Results

Research Question 1: What are the methods used by teachers in teaching Biology in Senior Secondary Schools

Table 1: Descriptive Statistics on Dominant Method of Teaching Biology in Senior Secondary school Schools.

S/N	ITEM	N	A	D	MEAN	STANDARD DEVIATION	DECISION
1.	My teacher spends most of the time in class explaining.	200	189 (94.5%)	11 (5.5%)	3.52	0.68	Agree
2	I usually listen quietly.	200	193 (96.5%)	7 (3.5%)	3.42	0.66	Agree
3	I usually copy notes in class while the teacher writes on the board after explaining.	200	186 (93.2%)	14 (7.0%)	3.38	0.68	Agree
4	My teacher asks questions at the end of the class.	200	182 (91.0%)	18 (9.0%)	3.28	0.74	Agree
5	My teacher usually divides the class into smaller groups.	200	87 (43.8%)	112 (56.3%)	2.25	1.03	Disagree
6	I usually share my ideas with my classmate in the divided groups during Biology lessons.	200	142 (71.7%)	56 (28.3%)	2.96	1.07	Agree
7	We usually present our findings as a group to the whole class.	200	129 (65.1%)	69 (34.8%)	2.77	1.12	Agree
8	My Biology teacher goes around the groups to check on their progress.	200	129 (65.1%)	69 (34.8%)	2.75	1.13	Agree
9	My teacher gives us time to think on the topic to be discussed.	200	138 (69.7%)	60 (30.3%)	2.80	1.05	Agree
10	My teacher shows us how an experiment is carried out.	200	148 (75.2%)	49 (24.9%)	2.93	0.97	Agree
11	My teacher give s us opportunity to perform an activity after watching him/her.	200	132 (66.7%)	66 (33.4%)	2.76	1.04	Agree
12	My teacher goes around the class to guide us as we practice an activity.	200	132 (66.7%)	66 (33.4%)	2.79	1.07	Agree
13	My teacher usually shows us rather than tell us how an activity is done.	200	122 (61.7%)	76 (38.4%)	2.65	1.09	Agree

Significant score: ≥2.5

Research question one sought to determine the methods used by teachers in teaching Biology. The data analyzed in Table1 reveals that the students indicated that their teachers use the lecture method (items 1-5), the discussion method (6-9) and the demonstration method (10-13). Even though the decision on item 5 is 'disagree', the responses to the other items indicate that group/discussion method is used in the Biology classroom.

Research Question 2: What is students' perception of the effect of their Biology teachers' teaching methods on their interest to study Biology?

Table 2: Descriptive Statistics on Students' Perception of The Effect of Their Biology Teachers' Teaching Methods on Their Interest to Study Biology.

S/N	ITEM	N	A	D	MEAN	STANDARD DEVIATION	DECISION
14	Biology lessons are usually very interesting because of the way my teacher teaches it.	200	192 (97.0%)	6 (3.0%)	3.54	0.59	Agree
15	I am always eager to learn Biology because the lessons are usually enjoyable.	200	187 (94.4%)	11 (5.5%)	3.32	0.67	Agree
16	My teacher teaches Biology in a boring way.	200	72 (36.8%)	124 (63.3%)	2.25	0.99	Disagree
17	My teacher's method of teaching Biology does not affect my interest to learn the subject.	200	113 (57.0%)	85 (43.0%)	2.57	1.12	Agree

Significant score: ≥2.5

Research question two sought to examine students' perception of the effect of their Biology teachers' teaching methods on their interest to study Biology. Analyzed data revealed that because of the way Biology is taught, students find the lessons interesting (item 14, $\overline{x}$= 3.54) and enjoyable (item 15, x=3.32). They do not find Biology lessons boring (item 16, x=2.25). Finally,

a majority of the students believe that their teachers' method of teaching Biology has no effect on their interest to learn the subject. Thus, it can be concluded that teaching methods affect students' interest to learn Biology.

Research Question 3: What is students' perception of the effect of their Biology teachers' teaching method on their academic performance?

Table 3: Descriptive Statistics on Students' Perception of The Effect of Their Biology Teachers' Teaching Method on Their Academic Performance.

S/N	ITEMS	N	A	D	MEAN	STANDARD DEVIATION	DECISION
18	My achievement in Biology will improve if my teacher uses a better teaching method.	200	183 (92.9%)	14 (7.1%)	3.43	0.77	Agree
19	I do well in Biology examinations because my teacher teaches the subject well.	200	185 (93.4 %)	13 (6.5%)	3.34	0.71	Agree
20	The way my teacher teaches Biology makes me a better learner.	200	173 (87.3%)	25 (12.7%)	3.26	0.82	Agree
21	My teacher's method of teaching Biology does not affect my performance in Biology examinations.	200	126 (63.6%)	72 (36.4%)	2.74	1.08	Agree

Significant score ≥ 2.5

Research question three sought to determine students' perception of the effect of their Biology teachers' teaching method on their academic performance. The data analyzed in Table 3 reveals that the students agreed to items 18-20 which indicates that they perceive their teachers' teaching method as a factor affecting their academic performance in Biology. However, a majority of the students also agreed that teaching method does not affect their performance in Biology examinations which is contradicting to what they had earlier reported.

Discussion of Results

Results of the first research question reveals that Biology teacher spends most of the time in class explaining. It was also revealed that students listen silently. It was seen that students copy notes after the teacher's explanation. It was also seen that teachers ask questions at the end of the class. Also, it was seen that Biology teachers do not divide the class into smaller

groups. It was seen that students present their findings as a group to the whole class. Biology students usually share their ideas with classmates in the divided groups during Biology lessons. It was seen that Biology teachers show how an experiment is carried out it was also seen that Biology teachers shows instead of tell students how an activity is done.

Data for the second question revealed that the following factors influence students' perception of the effect of Biology teacher's teaching methods on their interest to study Biology: Biology lessons are usually very interesting because of the way Biology teachers teaches it. Students are always eager to learn Biology because the lessons are usually enjoyable. The students disagree that their teacher teaches Biology in a boring way. It was seen that the teacher's method of teaching Biology does not affect the student's interest to learn Biology.

Data for the third question revealed that the following factors influence students' perception of the effect of their Biology teacher's teaching methods on their academic performance: students' achievement will improve if Biology teachers use a better teaching method. It was also seen that students do well because Biology teachers teach the subject well. The way Biology

teacher teaches makes the students better learners. Biology teacher's method of teaching does not affect students' performance in Biology examinations.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter presents a summary of the research work, conclusion and recommendations.

Summary of the Study

The study surveyed the methods of teaching Biology in senior secondary schools in Benin City. In the course of conducting the study, three research questions were raised. The study adopted the descriptive survey research design. The sample size for the study is two hundred (200) senior secondary school students in Egor Local Government Area of Edo State. A questionnaire titled 'Survey of Methods of Teaching Biology in Senior Secondary School in Benin City' was the main instrument used for data collection. Data from the questionnaire were analyzed using frequency, simple percentage, mean and standard deviation for the research questions.

Findings

Findings revealed that:

1. Lecture, Discussion and Demonstration are the methods used by Biology teachers in teaching the subject.
2. Students perceive their Biology teachers' teaching methods as a factor affecting their interest to learn the subject.
3. Students perceive their Biology teachers' teaching methods as a factor affecting their academic performance in the subject.

Conclusion

Based on the findings of this study, the following conclusion can be drawn which are;

1. Lecture method, Discussion method and Demonstration method are the dominant methods used by senior secondary school teachers to teach Biology in Benin City.
2. Students perceive their Biology teachers' teaching methods as a factor affecting their interest to learn the subject.
3. Students perceive their Biology teachers' teaching methods as a factor affecting their academic performance in the subject.

Recommendations

Based on the findings, the following recommendation are made for the successful teaching and learning of Biology in senior secondary school.

1. Teachers should use more of the learner-centred method rather than teacher-centred method of teaching.
2. Teachers should increase their knowledge of various instructional methods in order to keep students engaged and motivated throughout the learning process.
3. The researcher also advices that teachers should create an atmosphere conducive to learning in order to enhance the development of student's learning experience and their academic performances.

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APPENDIX

UNIVERSITY OF BENIN
BENIN CITY
FACULTY OF EDUCATION
DEPARTMENT OF CURRICULUM AND INSTRUCTIONAL TECHNOLOGY
QUESTIONNAIRE

Dear Respondent,

REQUEST TO COMPLETE QUESTIONNAIRE

I am an Undergraduate student of the University of Benin, Department of Curriculum and Instructional Technology in the Faculty of Education carrying out a research work on 'Survey of Methods of Teaching Biology in Senior Secondary School in Benin City'**.** I will be grateful if the questionnaire is responded to as sincerely as possible. You are assured that your views will be treated in confidence.

Thank you immensely for taking time to complete this questionnaire.

Yours faithfully

Ologun Ashimeje Victory

(Researcher).

PERSONAL INFORMATION
SECTION A
INSTRUCTION: Please tick (□) the following boxes**.**

SEX: Female ( ), Male ( )

CLASS: SS1 ( ) SS11 ( ) SS111 ( )

SECTION B: Dominant Method of Teaching Biology
INSTRUCTION: Listed below are statements that represent opinions that you may have about the dominant method of teaching Biology. Please represent your opinion for each item by ticking the appropriate boxes.

S/N	ITEMS	Strongly Agree	Agree	Strongly Disagree	Disagree
1.	My teacher spends most of the time in class explaining.				
2**.**	I usually listen silently.				
3**.**	I usually copy notes in class while the teacher writes on the board after explaining.				
4**.**	My teacher asks questions at the end of the class.				
5**.**	My teacher usually divides the class into smaller groups.				
6**.**	I usually share my ideas with my classmates in the divided groups during Biology lessons.				
7**.**	We usually present our findings as a group to the whole class.				
8**.**	My Biology teacher goes around the groups to check on their progress.				
9.	My teacher gives us time to think on the topic to be discussed.				
10**.**	My teacher shows us how an experiment is carried out.				
11**.**	My teacher gives us opportunity to perform an activity after watching him/her.				
12.	My teacher goes around the class to guide us as we practice an activity.				
13**.**	My teacher usually shows us rather than tell us how an activity is done.				

SECTION C: Students' perception of the effect of Biology teachers' teaching methods on their interest to study Biology?

S/N	ITEMS	Strongly Agree	Agree	Strongly Disagree	Disagree
14.	Biology lessons are usually very interesting because of the way my teacher teaches it.				
15.	I am always eager to learn Biology because the lessons are usually enjoyable.				
16.	My teacher teaches Biology in a boring way.				
17.	My teacher's method of teaching Biology does not affect my interest to learn the subject.				

SECTION D: Students' perception of the effect of their Biology teachers' teaching method on their academic performance?

S/N	ITEMS	Strongly Agree	Agree	Strongly Disagree	Disagree
18.	My achievement in Biology will improve if my teacher uses a better teaching method.				
19.	I do well in Biology examinations because my teacher teaches the subject well.				
20.	The way my teacher teaches Biology makes me a better learner.				
21.	My teacher's method of teaching Biology does not affect my performance in Biology examinations.				