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The Impact Of Motivation On Senior Secondary School Students' Interest In Biology In Onitsha North Local Government Area Of Anambra State

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ABSTRACT
This study focuses on the impact of motivation on senior secondary school students' interest in Biology in Onitsha North Local Government Area, Anambra State. The population for the research includes all SS2 students in public secondary schools within the area, which comprises a total of 3,938 students for the 2023/2024 academic session. At the time of the study, there were 16 senior secondary schools in Onitsha North, and six schools were randomly selected through a simple random sampling process. From each of these schools, 20 students were chosen resulting in a total sample of 120 students (30 male and 90 female). The study was guided by three research questions. A descriptive survey research design was employed, with data collection facilitated through a structured questionnaire consisting of 25 items. The instrument was validated by specialists in the field, and a reliability coefficient of 0.60 was established. The data obtained from the questionnaires were analyzed using mean and standard deviation. The findings of the studies revealed that motivation plays a significant role in influencing students' interest in biology. Effective motivational strategies identified include the use of real-life applications of biology, interactive and student-centered teaching methods, positive reinforcement, and the integration of technology in the learning process. These strategies were found to be essential in creating a more engaging and supportive learning environment, which, in turn, helped foster a more positive attitude towards biology among the students. The study concludes with several recommendations for improving motivational strategies in biology education, as well as a discussion of the overall implications of the findings.
Keywords: Biology, Motivation, positive reinforcement, questionnaire, and Integration.

INTRODUCTION

Biology is one of the most indispensable basic subjects in all levels of science education in Nigeria. Biology is the scientific study of life, encompassing a vast array of sub-disciplines that explore the structure, function, growth, origin, evolution, and distribution of living organisms. As a natural science, biology integrates various themes and principles that provide a cohesive understanding of life on Earth. Also to learn means to gain knowledge, to gain skills, to grow better or to make progress through study (Oyeniran, 2013). In Nigeria some students have come on top in biology in many international comparative studies. Thus, for knowledge in any form to affect character, there must be interest. Obodo (2021) stated that interest is a very strong factor in the teaching and learning of biology. The degree and direction of attitude towards biology are largely determined by the kind of interest developed by students for the subject, which can be achieved through motivation. Therefore, it is necessary to develop a comprehensive understanding of the students' motivation and engagement

and their relationships. Student motivation and interest emerged as a complex issue in basic education (Veiga, 2012).

Kahn (2013), stated that motivation and interest are inseparable, but some studies overly concentrated on the behavioural engagement and ignored motivation. Learning is a changed of performance brought about through conditions of activities, practice and experience.

Nworgu (2021) defined interest as a motivational construct which spur one into action in addition to giving direction to one's activities. Interest could also be regarded as the condition of wanting to know or learn about some object and also the trait which arouses concern or curiosity which holds one's attention on an object. Udegbe (2009) described interest as a disposition, attitude feeling of an individual towards an activity which shows behaviourally, the extent at which the person likes to participate in the activity.

The term motivation derives from the Latin word "movere" which means to "move" and refers to the moving force that energizes behaviour (westen, 2020). Motivation can be defined as any condition which initiates guide and maintains a response. The motivational process pokes the learners to react to environmental stimuli to refine their perceptual field. A child who is not motivated does not take school work seriously, absent himself or herself from school without good reasons and is not keen in doing school assignment. Motivation refers to those factors which increase and develop the vigour of an individuals' activity. Motivation has two components; what people want to do and how strongly they want to do it. The first component refers to the direction in which activity is motivated- namely which goals the person is pursuing or avoiding. People can be motivated to pursue different goals. Motives also vary in their strength. People may have dozens of motives available to them at any given point but they only act on those that currently "move" them. Motivation is the push behind behaviour that directs actions towards the achievement of certain goals. It refers to the internal conditions that arouse, sustain and direct behaviour in response to situations and objects in the environment. Motivation has two mainly types intrinsic (within) and extrinsic (without). The intrinsic motivation is tendencies which we are born with. It is biologically inherent will, drive or tendency to perform an act. An instinct is an innate force found in all members of specie that directs behaviour in predictable ways in the presence of the right eliciting stimulus. Intrinsic motivation is products of stimuli that are from within. These stimuli become motives as they push or propel the individual in the direction to fulfil them. The extrinsic motivation is the incentives, feedback, rewards that arouse actions or more work performance. It includes such factors as teacher personality, work conditions, teaching techniques and punishment which determine the course of event in the classroom.

The impact of motivation on senior secondary school students' interest in biology has not been extensively investigated by researchers to the best knowledge of the researcher. It is against this background that the researcher was motivated to investigate the impact of motivation on senior secondary school students' interest in biology in Onitsha North Local Government Area of Anambra state.

Statement of the Problem

Biology has been a serious problem facing senior secondary school students in all level of education. The problems range from lack of interest in biology which could lead to disengagement, poor performance, and limited future opportunities in science, technology, engineering and mathematics (STEM) fields. Also, the problem still includes uninspiring teaching methods, a perceived lack of relevance to their lives or limited support from teacher and parents. Some student holds negative attitudes towards biology, viewing it as difficult, boring, or irrelevant which can further diminish their motivation and interest in the subject (biology).

The main problem of this study which researcher intends to find out is to ascertain impact of motivation on senior secondary school students' interest in biology in Onitsha North Local Government Area of Anambra State.

Purpose of the Study

The purpose of the study is to find out the impact of motivation on senior secondary school students' interest in biology in Onitsha North Local Government Area of Anambra State. In specific terms, the study intends to achieve the following objectives:

1. Find out motivation strategies to improve students' interest in learning of biology.

2. Find out the extent to which motivation influence senior secondary school students' interest in biology.
3. Find out the extent to which intrinsic and extrinsic motivation influence the senior secondary school students' interest in biology.

Significance of the Study

The findings of the study will be of great benefits to teachers, parents, federal and state government, future researchers, guidance counsellor, students and school authorities at large in tacking the problems of motivation and interest in biology when they are confronted with them. For instance: the result of the study will be beneficial to teachers as it will ignite a passion for learning that can last a lifetime. It will also be beneficial to parents as a higher chance of achieving their goals. Financial support from parents significantly influences students' motivation in learning. Governments on their part will realise the need to provide good conducive environment that will facilitate students' positive attitude towards biology and consequently improve their interest in biology.

Scope of the Study

The study focuses on the impact of motivation on senior secondary II students' interest in biology in Onitsha North Local Government Area of Anambra State. Its contents scope is to examine the motivation strategies to improve students' interest in learning of biology on only government (public) senior secondary school in Onitsha North Local Government Area.

Research Questions

The following research questions will be answered to obtain the findings or results of this study:

1. What are the motivation strategies to improve students' interest in learning of biology?
2. How does motivation influence the senior secondary school students' interest in biology?
3. Does intrinsic and extrinsic motivation influence the senior secondary school students' interest in biology?

METHOD

Research Design

A descriptive survey design was adopted for this study. According to Nworgu (2016), a descriptive survey design aims at collecting and analyzing data in a systematic manner from only few people or items of study considered being representative of the entire population. The design is considered to be appropriate for this study as the study made use of primary data adequate for answering the research question raised in the study. This design enables the researcher to generalize findings based on data collected from respondent who will serve as sample.

Area of the Study

The study will be carried out in Onitsha North Local Government Area of Anambra State located at the South Eastern geopolitical zone of Nigeria. Onitsha North Local Government Area is bordered in the East by Idemili North and Oyi Local Government, in the north Anambra East Local Government, in the South by Onitsha South Local Government and in the West by Delta State. Onitsha North is situated in Onitsha Town. The metropolitan city Onitsha is known for its river port and an economic hub for commerce, industry and education. The headquarter of Onitsha North is located in Onitsha Town. Onitsha North is mostly populated by members of the Igbo ethnic group for which Igbo and English language are commonly spoken. Onitsha North local government accommodates people from diverse ethnic group, state, local government and communities. The former slogan of Onitsha North was home for all and currently addressed as light of the nation due to the hospitality of the indigenes in the local government. The primary/major occupations of the indigenes are trading, agriculture, etc, for which the local government hosts the Onitsha main market in Africa in terms of geographical size and volume of goods. Onitsha North has several public, missionary, private, nursery, primary, secondary and tertiary institutions. Therefore, Onitsha North Local Government Area of Anambra State is appropriate for the study because adequate sample size is assumed based on the large population of senior secondary school students.

Population of the Study

The population of the study comprises of all senior secondary schools (SS2) students in public secondary schools on Onitsha North Local Government Area. As at the time the study is carried out, there are sixteen Senior Secondary Schools (SS 2) in Onitsha North Local Government Area of

Anambra State. The total number of SS2 students in public secondary school during the 2023/2024 academic session in Onitsha North is 3,938 students (Onitsha education zone). The population is considered adequate for the study because the researcher believes they will provide relevant responses for the study.

Sample and Sampling Techniques

The sampling was done using simple random sampling technique. According to Lauren Thomas (2020), it is a randomly selected subset of a population. In this sampling method, each member of the population has an exactly equal chance of being selected. This method is the most straightforward of all the probability sampling methods since it only involves a single random selection. The researcher used the simple random sampling by balloting to select six senior secondary schools in Onitsha North Local Government Area out of sixteen senior secondary schools. Twenty students were selected from each school using the same sampling technique. This gives a total of 120 students (30 male and 90 female). Therefore, the sample comprised 120 SS2 students.

Instrument for Data Collection

The instrument for this study will be students' motivation and interest (SMI) structured questionnaire consisting of two sections, A and B. Section A seeks to elicit information on the personal characteristics of the respondents while section B is to obtain information based on the research objective. The instrument has a total of twenty-five items structured under modified of likert rating scale of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD).

Validation of the Instrument

The instrument was subjected to face validation by two lecturers, one in the department of biology and the other lecturers in measurement and evaluation department of Nwafor Orizu College of Education, Nsugbe. They went through the instrument, make necessary corrections and suggestions. The final copy was made putting into actions all those corrections and suggestions.

Reliability of the Instrument

In order to determine the reliability of the instrument, the researcher adopted test re- test method which was used to determine the reliability of the instrument. The researcher administered the same questionnaire to different respondent at one secondary school in Onitsha South L.G.A. after an interval of two weeks, the same questionnaire was administered to the same group of students again. The data obtained were correlated using Pearson Product Moment Correlation Coefficient (PPMCC) and the reliability coefficient established was 0.60 and this shows that the instrument was reliable for the study.

Method of Data Collection

The method used in data collection was used in this direct questionnaire administration. The researcher administers the copies of the questionnaire to biology students with the help of their class teachers in the selected secondary schools in Onitsha North Local Government Area. The questionnaire was collected back immediately after completed. This method also offers the researcher the opportunity to interview and interact with the biology teachers and also ensures 100% return rate.

Method of Data Analysis

The researcher used arithmetic mean and standard deviation to answer the research questions. Mean was used to determine the level of agreement or disagreement of each questionnaire item.

Decision rule

Any item with a mean rating of 2.5 and above will be accepted while mean rating below 2.5 will be rejected.

DATA PRESENTATION AND ANALYSIS

Research Questions One: *What are the motivation strategies to improve students' interest in learning of biology?*

Table 4.1

Mean rating and standard deviations of responses on the motivation strategies to improve students' interest in learning of biology.

S/N	ITEMS	SA	A	D	SD	N	$\overline{X}$	Sd	Decision
1.	My biology teacher makes biology fun	50	50	15	5	120	3.20	0.84	Accepted
2.	I achieve something after learning biology	60	20	20	20	120	3.00	1.15	Accepted
3.	My biology teacher evaluates after teaching biology	10	15	65	30	120	2.04	0.84	Rejected
4.	My biology teacher creates a positive competition on biology	10	10	50	50	120	1.83	0.89	Rejected
5.	My biology teacher gives lots of examples in biology	9	11	6 0	40	120	1.90	0.85	Rejected
6.	My teacher uses relevant materials in teaching biology	60	20	20	20	120	3.00	1.15	Accepted
7.	My teacher allows students to study independently before sharing in small or large groups	70	20	20	10	120	3.25	1.01	Accepted
8.	I am motivated to learn biology because of the teacher friendly attitude to the student	80	20	5	15	120	3.37	1.03	Accepted

Data presented on table 1 above shows the mean ratings of the respondents in SS2 students with regard to on the motivation strategy to improve students' interest in learning of biology. The data indicates that the mean ratings of the respondents for items 1,2,6,7 and 8 are 3.20, 3.00, 3.00, 3.25 and 3.37 with corresponding standard deviation of 0.81, 1.15, 1.15, 1.01 and 1.03 while items 3, 4 and 5 have a mean rating of 2.04, 1.83 and 1.90 with standard deviation of 0.84, 0.90 and 0.85. Based on the data: the respondents views that their biology teacher makes biology fun, they achieve something after learning biology, their biology teacher uses relevant materials in teaching biology, they study biology independently before collaborating and also their biology teacher motivates them to learn biology. All these are motivation strategies that improve students' interest in learning of biology.

Research Question Two*:* *How does motivation influence senior secondary school students' interest in biology?*

Table 4.2 Mean rating and standard deviations of responses on the motivation influence on senior secondary school students' interest in biology.

S/N	ITEMS	SA	A	D	SD	F	FX	$\bar{X}$	Sd	Decision
9.	I developed interest in biology because my teacher rewards right/corrects answers	75	15	20	10	120	395	3.29	1.02	Accepted
10.	My teacher revises before starting new lesson, which helps in my retention.	60	20	20	20	120	360	3.00	1.15	Accepted
11.	We do class drill after every lesson to keep the lessons fresh on our minds.	10	10	60	40	120	230	1.91	0.88	Rejected
12.	My teacher uses visual instructional material in teaching	30	30	20	40	120	290	2.42	1.18	Rejected
13.	My biology teacher does revision before examination, which makes it easy for us to remember.	50	50	10	10	120	380	3.17	0.87	Accepted
14.	I do better in biology when my little effort is rewarded.	40	60	10	10	120	370	3.08	0.87	Accepted
15.	We normally do corrections on every class work done in the class.	45	45	15	15	120	360	3.00	1.00	Accepted
16.	I have biology textbooks that covers the whole scheme of work.	45	35	20	20	120	310	2.58	1.09	Accepted

From the table two above, item 9, 10, 13, 14, 15, and 16 have mean scores of 3.29, 3.00, 3.16, 3.08, 3.00, and 2.58 which were accepted while items 11 and 12 has mean scores less than 2.50 which was below average and were rejected.

Research Question Three: *How does intrinsic and extrinsic motivation influence the senior secondary school students' interest in biology?*

Table 4.3 Mean rating of responses on the influence of intrinsic and extrinsic motivation on senior secondary school students' interest in biology.

S/N	ITEMS	SA	A	D	SD	N	$\bar{X}$	Sd	Decision
17.	I get good results on biology when I study hard	35	55	20	10	120	2.96	0.88	Accepted
18.	Biology material is fully understood	20	60	20	20	120	2.66	0.96	Accepted
19.	My biology teacher creates an appropriate climate for learning	5	5	80	30	120	1.87	0.66	Rejected
20.	My biology teacher motivates me to study biology	30	30	40	20	120	2.58	1.05	Accepted
21.	I enjoy studying biology, because my teacher will congratulate me when I pass.	40	60	10	10	120	3.08	0.86	Accepted
22.	I ask question in class because I want to learn new things	50	50	10	10	120	3.17	0.88	Accepted
23.	I think learning biology is easy	45	45	15	15	120	3.00	1.00	Accepted
24.	I like biology because of the way my teacher teaches it	35	45	20	20	120	2.79	1.04	Accepted
25.	I am somehow always anxious about biology class	40	60	10	10	120	3.08	0.86	Accepted

From the table three above, item 17, 18, 20, 21, 22, 23, 24, and 25 have mean scores of 2.96, 2.66, 2.58, 3.08, 3.17, 3.00, 2.79, and 3.08 which were accepted while item 19 has mean scores less than 2.25 which was below average and were rejected.

Summary of Major Findings

Based on the data presentation and analysis, most of the respondents 75% (90) were female students in the senior secondary schools because majority of students in senior secondary school are females. It was revealed from research question one that motivation strategy improves students' interest in learning of biology, with majority of the respondents agreeing with the research question. From research question two, it was revealed that motivation influence senior secondary school students' interest in biology, with majority of the respondents agreeing with the research question. From research question three, it was revealed that intrinsic and extrinsic motivation influences the senior secondary school students' interest in biology, with majority of the respondents agreeing with the research question.

DISCUSSION OF THE FINDINGS

What are the motivation strategies to improve students' interest in learning of biology?

Table 4.1 indicates that items 1, 2, 6, 7, and 8 were accepted. While items 3, 4 and 5 has means scores less than 2.50 which was below average and were rejected. This suggests that biology teachers do not evaluate after teaching, do not foster positive competition in biology, and do not provide many examples. This conclusion is drawn because their mean scores of 2.04, 1.83, and 1.90 fall below the threshold for acceptance and were therefore rejected, which was in line with that of Ogunmoyero and Omasheye (2012) who assert that human beings are characterized by tendencies towards learning and thus, human beings are naturally teachable and curious. In spite of this, there is usually the need to motivate people for achieving success in learning.

How does motivation influence the senior secondary school students' interest in biology?

From the table 4.2, item 9, 10, 13, 14, 15, and 16 have mean scores of 3.29, 3.00, 3.25, 3.08, 3.00, and 2.88 which were accepted while items 11 and 12 has mean scores less than 2.50 which was below average and were rejected, which was in line with that of Glynn and Koballa (2006), who stated that motivation is an internal state which involves the arousal, direction and sustenance of students' behaviours. This explains why students work hard to achieve high academic performance in science subjects in particular biology. It also explains the depth and length of time involved in such endeavours and the feelings and emotions applied in achieving success in such subjects. Glynn and Koballa (2006) explain that 'motivation to learn' encompasses students' resolve to attach meaning and value to an academic activity with a view to obtaining the benefits accruing from such activity.

How does intrinsic and extrinsic motivation influence the senior secondary school students' interest in biology?

From the table 4.3, item 17, 18, 20, 21, 22, 23, 24, and 25 have mean scores of 2.96, 2.66, 2.58, 3.08, 3.17, 3.00, 2.79, and 3.08 which were accepted. However, item 19 has a mean score below 2.50, which is considered below average, and was therefore rejected. It lends credence tone to the findings of Harter (2018), who explained that intrinsic motivation is the true drive in human nature, which drives individuals to search for and to face new challenges as the students' abilities are put to the test and they are eager to learn even when there are no external rewards to be won. Therefore, with intrinsic dimension of motivation, one can achieve high academic performance in biology without minding the external factors that could militate the academic performance.

CONCLUSION

This study explored the role of motivation in enhancing senior secondary school students' interest in biology. The research questions were designed to uncover effective motivation strategies, assess the overall influence of motivation on students' interest in biology, and examine the differential effects of intrinsic and extrinsic motivation.

The findings of this study indicate that motivation plays a crucial role in shaping students' attitudes and interest in biology. Effective motivational strategies identified include the integration of real-life applications, interactive and student-centered teaching methods, the use of positive reinforcement, and the incorporation of technology in the learning process. These strategies are essential for creating an

engaging learning environment that encourages students to develop a positive outlook towards biology.

The study further revealed that both intrinsic motivation; such as personal satisfaction, curiosity, and the inherent enjoyment of learning biology, and extrinsic motivation such as; rewards, recognition, and external encouragement, significantly influence students' engagement and sustained interest in biology. Intrinsic motivation was found to be particularly powerful in fostering long-term interest and academic success in the subject, while extrinsic motivation also played an important role in boosting students' initial engagement and participation.

The study emphasizes the critical need for a comprehensive approach to motivation in biology education. This approach must encompass both intrinsic and extrinsic factors while being sensitive to the distinct responses of male and female students. By adopting such an approach, educators can effectively support all students in cultivating a profound and enduring interest in biology.

Intrinsic motivation, driven by personal enjoyment and curiosity about biological concepts, play a fundamental role in fostering deep engagement and sustained learning. It encourages students to explore biological ideas independently and to derive satisfaction from understanding and solving problems. Conversely, extrinsic motivators such as grades, rewards, and external recognition provide additional incentives that can complement intrinsic motivation. However, these must be carefully balanced to avoid overshadowing or undermining students' innate curiosity and interest.

Gender differences in motivational responses underscore the importance of tailored educational strategies. Research indicates that male and female students may demonstrate varying motivational patterns in biology. Educators can address these differences by offering diverse examples and contexts that resonate with both genders, promoting collaborative learning environments, and encouraging self-directed exploration of biological concepts. Accommodating these varying motivational needs, will enable educators mitigate barriers to engagement and enhance overall academic performance across genders.

In practical terms, adopting a nuanced approach to motivation enables educators to create inclusive learning environments where all students feel valued and supported. This approach fosters positive attitudes towards biology. Students are more likely to perceive biology as relevant and meaningful when their intrinsic motivations are nurtured and when they perceive that their educational environment respects and responds to their individual motivational needs.

Educational Implication

The findings suggest that biology teachers should make a strong effort to motivate their students throughout the learning process. Motivation plays a key role in students' academic performance, and teachers are in a unique position to inspire interest and engagement during instruction. However, the responsibility of motivation does not rest solely on teachers. Parents and government bodies also have important roles to play. Parents can support their children's learning by fostering positive attitudes toward biology at home, while the government can initiate and support programs aimed at encouraging students to enhance their academic performance.

Programs led by parents and government could include extracurricular activities, mentorship opportunities, or educational campaigns that create a culture of curiosity and enthusiasm for learning biology. By working together, these stakeholders can create a more motivating environment that enhances students' engagement and academic success. It is expected that the findings of this study will serve as a valuable resource for biology educators, parents, government officials, and anyone else invested in the academic progress of students. Through collective efforts, students can be better supported in their journey toward improving their performance in biology and developing a long-lasting appreciation for the subject.

Recommendation

Based on the findings, the following recommendations were made:

i. Biology teachers in their daily delivery of biology knowledge should emphasize on the need and role of intrinsic motivation in learning biology and intensify effort at counselling students towards achieving good performance in biology.
ii. School administrators should put together series of programmes that will enlighten students on intrinsic motivation to learn biology such as seminars, orientation and motivational speeches.

Limitation of the Study

Due to time constrained the researcher limit the study to Onitsha North LGA of Anambra State, as the researcher combine lecturing and research as well. Some other limitations are student reluctant to fill the questionnaire, strike action, lack of integrated knowledge of data analysis.

Suggestion for further Studies

The following suggestions need to be considered for the purpose of further enquires.

1. The study should be replicated in other local government towns and states of the federation
2. Each of the challenging factors should be isolated and subjected to thorough investigation in future research
3. A similar research study could be carried out in private schools in Onitsha north local government area.

Summary of the Study

Based on the above argument, it is quite impossible to successfully overcome all the challenges that come along the teacher's way. But a focus on challenges faced can lead to ways and best strategies that could provide answers to unlocking those challenges. Failure in biology is a major problem for educators, teachers and school administrations, and parents because it slows down the academic/intellectual development of students. Also, this problem prevents students from gaining admission into tertiary institutions. One of the major causes of failure in biology at the senior secondary school level is attributable to lack of adequate motivation and interest to learn the subject bearing in mind the rigorous and abstract nature of biological operations. However, more recent studies have unveiled that despite socio-economic background, some students are intrinsically boosting their interest in biology. This unique dynamic has great implications for biology education at the senior secondary school level, particularly in Onitsha North Local Government Area of Anambra State, where the socio-economic demographics are rather homogenous. This study, therefore, sets out to identify the cause of the issues and its solutions.

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