

Appraisal of Some Motivational Strategies that Enhance Learning and Students' Achievement in Biology in Plateau State, Nigeria

¹Lagan, Andat Nathaniel, ²Agbo Felicia, O. & ³John Friday

^{1,2&3}Department of Science and Technology Education,
University of Jos, Nigeria

Article DOI: 10.48028/iiprds/ijrfest.v4.i3.01

Abstract

This study appraised some motivational strategies that are being used by Biology teachers to enhance the learning of Biology and student's achievement in the subject. The study was a survey and some motivational strategies were listed. A questionnaire was developed and the respondents were required to assess the efficacy of the motivational strategies vis-à-vis the learning of Biology and its effect on student's achievement. Stratified random sampling technique was used to select the respondents for the study which comprised 192 students and 10 Biology teachers selected from 3 public secondary schools in Jos South Local Government Area of Plateau State, Nigeria. The questionnaires were administered and results from the study revealed that motivation strategies enhance learning and positively impact students' achievement in Biology. It was therefore recommended that motivational strategies should be inculcated into the instructional strategies used in pedagogy in Biology.

Keywords: *Motivational strategies, Learning, Achievement*

Corresponding Author: **Lagan, Andat Nathaniel**

Background to the Study

Motivation can be seen as a force within an education setting which encourages students learning and understanding in class (Filgona, Sakiyo, Gwany and Okoronka, 2020). Motivation, learning and achievement are very important factors to consider in instruction as variables that are interwoven to promote meaningful learning in students as asserted by Ozen (2017). Adjei and Amofa (2014) wrote that most problems that teachers face in the classroom is the seemingly lack of interest from the students especially in the sciences and Agbo (2013) wrote that most teachers shy away from innovative, activity oriented, learner centered teaching methods to teach biology. Adjei and Amofa further wrote that educators are expected to arouse or stimulate interest of students in the subjects being taught and this could be a herculean task. Bakar (2014) added that the productive competencies of high school students is hinged on the student's attitude and interest in the subject, therefore every effort should be put into the education enterprise to devote more resources and energy to motivate students to learn if at all the goals of education are to be met.

Chan and Norlizah (2017), in a study to identify student's motivation towards science learning and students' achievement wrote that students were moderately motivated towards science learning and emphasized that motivating students to learn is a key component that should be inculcated in instruction. In contemporary times, it is not surprising to see a decline in student's achievement in Biology as occasioned by the student's attitude to learning. Also, for a nation like Nigeria which wants to progress towards a developed nation status among the committee of developed nations, it is imperative to ginger instruction with revolutionary strategies that could enhance the instruction for meaningful learning. Thus, motivational strategies have become imperative to be fused into instructional strategies to meet that goal.

Instructional strategies for teaching and learning vary among teachers and so motivational strategies will also vary depending on which type a teacher finds suitable and convenient. Motivation can be intrinsic or extrinsic and motivation strategies could be a combination of the two. Some motivational packages were identified as being already in use during instruction by some teachers and this study was carried out to amplify, emphasize and appraise them. The motivational strategies identified were woven into the questions in the questionnaires to appraise their efficacy in enhancing learning and student's achievement in Biology.

Motivation has been defined in several ways, but has been related to the amount of intellectual energy used in learning activities (Filgona et al, 2020). Taasoobshirazi and Sinatra (2011) wrote that motivation is a complex multidimensional construct that interacts with cognition to influence learning while opining that motivation is an inner state or force that energizes, directs and sustains behaviour towards achievement of a goal. Motivation is what causes a person to want to know, act and understand particular skills; it is also a drive to satisfy individual needs for example, learning to read so as not to be cheated. These definitions and the plethora of definitions of motivation by many scholars make it difficult to describe motivation in one context. Therefore, in the context of this study, motivation strategies refer to a set of strategies that students are exposed to which will guide, push or compel them to accomplish a given task in the biology classroom.

Achievement could be described as how well a student meets the standards set out by the institution of learning (Maikano, 2014). When achievement in Biology declines as a very important subject in Science Technology Education (STE), it becomes worrisome for government, teachers, parents and the society in general. Based on the above concern, it is imperative to assess the current trend and prospects in order to enhance the interest in learners in Biology.

Problem Statement

Student's achievement in Biology has been linked with motivation to learn but emphasis has not been put on motivation by some teachers and as a consequence student's achievement in the subject has witnessed a steady decline. Some Biology teachers have attempted to motivate students to learn and some of the strategies used in motivating students were listed in this study and appraised for efficacy.

Research Objectives

The purpose of the study is to appraise some motivation strategies for efficacy in enhancing learning and student's achievement in Biology. The objective of this study was to appraise some motivational strategies and the effects on learning and achievement of students in Biology.

Methodology

The research design was a survey aimed at appraising the influence of motivation strategies in enhancing learning and student's achievement in Biology. The target population for the study was senior secondary two Biology students and Biology teachers in the education zone of northern Plateau State, Nigeria. The stratified random sampling technique was used to select the population sample of 192 students and 10 Biology teachers who were administered the questionnaires comprising 10 questions on motivation strategies that enhance learning and student's achievement in Biology. Two questionnaires were used for the study, A questionnaire for teachers titled "Motivation Strategies towards Enhancing Students Achievement in Biology" (MSTESAB) and a questionnaire for students titled "Motivation Strategies that Enhance Students Achievement in Biology" (MSESAB). Descriptive statistics was used to analyze the results obtained from the questionnaires.

Motivation strategies in this study are a set of strategies that students are exposed to which will guide, push or compel them to accomplish a given task in the biology classroom. Some of the motivation strategies discussed in the study which formed the questionnaire includes the under listed;

Motivational Strategies

1. Giving students a sense of control. Let students believe they are stakeholders in the pedagogy;
2. Defining the objectives of the topic- Let the students know what is expected of them and the goals you want to achieve;
3. Creating a free environment in class- Allow students to move freely from time to time instead of making them sit all day on a desk;

4. Offering varied experiences to students- Allow students to explore other ways of finding solutions to problems instead of sticking to text book solutions;
5. Use of positive competition- Engage students in small competitions in the classroom either in groups or individually;
6. Offering rewards- Give students reward for performance;
7. Giving students responsibility- This will help students to meet expectations because of involvement;
8. Allowing students to work together- This excites students and encourages problem solving;
9. Encouraging self-reflection- Help students to examine themselves, their strengths and weaknesses and critique themselves by themselves;
10. Knowing your students personally- Letting students know that you are interested in them and their success will motivate them to do more;
11. Harnessing students' interests- Relate classroom material to the things that the students are interested in or have experience about;
12. Helping students to find intrinsic motivation-Encourage students to motivate themselves by finding personal reasons for working hard in school;
13. Making goals high but attainable-Challenge students to aim for higher goals by making them see these goals within their reach;
14. Giving feedback and offering students chances to improve- Let students know where they are wrong in a task and how they can improve next time. Allow the students to choose different methods or approaches to find solutions to problems;
15. Making things fun in class- Class should be enjoyable by adding fun activities to help students relax and participate in class;
16. Providing students, the opportunities for success- Create an environment of inclusiveness to carry all students along especially those who are struggling. When the students feel valued, they will be motivated to learn.

The motivation strategies were woven into intrinsic and extrinsic motivation and developed into two questionnaires with 10 questions each which were administered, retrieved and analyzed and the results of the analysis are presented and discussed.

Results and Discussion

Table 1: Percentage responses from the respondents

Motivation strategies enhance students learning and achievement

Respondents	Teachers	Students
Percentage	69.1% (n=6)	61.8% (n=114)

Motivation strategies Do Not enhance students learning and achievement

Respondents	Teachers	Students
Percentage	23.2 % (n=3)	37.0 % (n=78)

Motivation strategies have no link with students learning and achievement

Respondents	Teachers	Students
Percentage	7.7% (n=1)	Nil (n=0)

The findings from the study reveal that most of the teachers agree that the motivation strategies enhance students learning and achievement in Biology. For the teachers, 69.1% (n=6) agreed that motivation strategies enhance students learning and achievement in Biology. 23.2% (n=3) of the teachers are of the opinion that motivation strategies do not enhance students learning and achievement in Biology while 7.7% (n=1) are of the opinion that motivation strategies have no links with students learning and achievement in Biology. Results collated from the students' responses reveal that 61.8% (n=114) of the students agree that motivation package enhances learning and achievement in Biology. 37.0 % (n=78) of the respondents opined that motivation strategies do not enhance learning and achievement in Biology while no respondent answered that motivation strategies do not have any links with learning and achievement of Biology students.

The findings of the present study that motivation strategies enhance students learning and achievement in Biology are consistent with findings of studies conducted by Bakar (2014), Kingful and Nusenu (2015) and Sevince, Ozmen and Yigit (2011), which opine that, motivation influences students' achievement in science and that a significant relationship exists between levels of motivation and science achievement. The findings of this study also corroborate the ideas of Simmons (2014), Kamaei and Weisani (2013) and Afolakemi and Adebisi (2014) who in their various studies established significant relationships between motivation and student's achievement while going further to assert that motivation enhances learning.

Implications of the Study

The findings of this study shall help to provide an understanding of the place of motivation strategies in learning and achievement of students. Through the study, motivation strategies that enhance learning and achievement in Biology were identified and appraised and their efficacy established to be effective. The findings of the study shall accord teachers the understanding of the motivation strategies which could be used in pedagogy to enhance

learning and achievement in Biology, the findings will also help students to understand better about motivation strategies and how motivation levels towards learning relates to their achievement in Biology.

The findings showed that there was a significant relation between motivation strategies and learning and students' achievement in Biology. On the whole, the findings have implications on Biology teachers and students; where Biology teachers will identify the motivation strategies suitable for the instructional strategies to enhance learning and achievement in Biology and for students to realize that there is a link between their motivation towards learning and their achievement in Biology. Therefore, teaching strategies should be laced with motivation strategies to enhance learning and achievement of students so as to meet the desired goals of education.

Future Study

This study did not find out if any difference exists between male and female students when motivation strategies are applied to enhance learning and achievement in Biology. A relatively small sample was used for this study, a larger sample could be used to assess if there would be a difference in the responses in terms of percentages. The study also was limited to Biology as a subject therefore further studies could be conducted using other science subjects. Other factors like parental influence, school location and interactions of different environmental and social factors were not considered when conducting the study thereby giving room for further research in the area.

Conclusion

It is essential that stakeholders in the teaching and learning enterprise get abreast with strategies that can improve teaching and learning in the classroom so as to meet the goals of education. This study was able to identify some motivation strategies which enhance learning and achievement in Biology using a sample population, therefore teachers are expected to identify what motivation strategies they can utilize in pedagogy to enhance learning and achievement of students so that the goals of education which are expected to meet the needs of the society can be met.

References

- Adjei, H. & Amofa, A. K. (2014). Teacher motivation in senior high schools in the cape coast metropolis, *European Journal of Education and Development Psychology*, 2(1), 18-25. www.Ea-journals.org.
- Afolakemi, O. & Adebisi, A. (2013). Impact of teacher's motivational indices on science student's academic performance in Nigerian senior secondary schools, *Canadian Center of Science Education*. 6 (2), 49-54. DOI.10.5539/res.v6n2p49. Retrieved on February 20, 2021
- Agbo, F. O. (2013). Effects of individualized, collaborative field work and expository learning on biology student's ability to solve problems, *International Journal of Research in*

Science, Technology and Mathematics Education. 1(2), 82-89.

- Baker, R. (2014). The effect of learning motivation on students' productive competencies in vocational high schools, West Sumatra, *International Journal of Asian Social Sciences. 4(6), 722-732.*
- Chan, Y. L & Norzilah, C. H. (2017). Student's motivation towards science learning and students' achievement, *International Journal of Academic Research in Progressive Education and Development. 6(4), 174-189.* DOI: 10.6007/IJARPED/v6-14/3716
- Filgona, J., Sakiyo, J., Gwany, D. M. & Okoronka, A. U. (2020). Motivation in learning. *Asian Journal of Education and Social Studies. 10(4), 16-37.* <https://doi.org/10.9734/ajess/2020/v10i430273>. Retrieved on March 13, 2021.
- Kamaei, A. & Weisani, M. (2013). The relationship between achievement motivation, critical thinking and creative thinking with academic performance, *Indian Journal of Fundamental and Applied Life Sciences. 3(4), 121-127.* <http://www.cibtech.org/jls.htm>.
- Kingful, S. & Nusenu, A. B. (2015). Teacher motivation in senior high schools in Ghana: A case of Ghana senior high schools. *Journal of Education and Practice. 6(16), 110-121.*
- Maikano, A. (2014). Effects of motivation on student's academic performance in biology in some selected secondary schools in Zaria L.G.A of Kaduna State, *Journal of Vocational Education and Training. 8(1), 183-193*
- Ozen, O. S. (2017). *The effect of motivation on student achievement; in: Karadag (eds). The factors affecting student's achievement.* 35-56. Springer, Cham. https://doi.org/10.1007/978-3-319-56083-0_3. Retrieved March 13, 2021.
- Sevinc, B., Ozmen, H., & Yigit, N. (2011). Investigation of primary student's motivation levels towards science learning, *Science Education International, 3, 281-232.*
- Simmons, M. (2014). *Student perception of motivation and their impact on effort and performance: A grounded theory study of effect and achievement motivation*, Doctoral dissertation, George Fox University.
- Taasoobshirazi, R. & Sinatra, N. (2011). A structural equation model of conceptual change in physics, *Journal of Research in Science Teaching. 48, 901-918*