ISSN: 4288 – 517X
Volume 9, Number 2, 2023
Educational Research and Policy Journal

THE EFFECT OF THE IMPLEMENTATION OF WAEC AND NECO CHIEF EXAMINERS' REPORTS ON SENIOR SECONDARY II BIOLOGY STUDENTS MOTIVATION IN JOS SOUTH, PLATEAU STATE, NIGERIA.

Piwuna, Comfort. N.[1] and Mankilik, Mangut[2]
Department of Science &Technology Education,Faculty of Education,
University of Jos, Jos, Nigeria

Email:piwunacomfort@yahoo.com,mankilikmangut@yahoo.com

ABSTRACT

The study investigated the effect of the implementation of the WAEC and NECO Chief Examiners reports on SS II biology students' motivation. The pre-test, post-test nonequivalent quasi-experimental design was used. The population of the study comprised all 697 SS II biology students from all the public schools in Jos South local government area of Plateau state in the 2021/2022 session. Purposive sampling technique was used to select two schools and two arms of intact classes; one from each school was used as sample. Random assignment into experimental and control groups was used. The Academic Motivation Scale for Learning biology (AMSLB) adapted from Aydin,Yerdelen ,Yalmanci and Goksu (2014), and validated by experts was used to collect data. The reliability of 0.98 was established using Cronbach Alpha. Inferential and ANCOVA statistics were used in analyses. Findings show that using the observations and recommendations of the WAEC and NECO examiners in teaching biological concepts significantly improved the motivation of biology students. The Federal and State governments are called upon to assist in purchasing the WAEC and NECO annual reports for schools and also make it mandatory for all school heads and proprietors to ensure its usage in the teaching –learning process.

KEYWORDS- Implementation, WAEC Chief Examiner Reports, NECO Chief Examiner Reports, Motivation.

INTRODUCTION

Teaching entails the provision of stimulus situations for learners and of selecting the behavioral response sought as objectives by the teacher who evaluates the learning. The process of evaluating the behavioral responses is done through examinations. Examination is an integral part of the teaching- learning process. Through examinations students are tested to find out the quality and quantity of knowledge acquired within a specified period. It serves as a tool for providing accountability of educational outcomes and as a basis for the successive improvement of educational programs (Hefferman, 2013). Collins English Dictionary defines it as a formal test taken to show one's knowledge or ability in a particular subject or to obtain a qualification. These tests could be written exercises, oral or practical tasks set to test a candidate's knowledge and skills. Obinne (2011), see examination as assessment to measure a test-takers knowledge, life skill, aptitude physical fitness or standing, in some other topic. Examinations are therefore close inspections, scrutiny or analysis of what has been learnt and it can take any form, not just questions on a piece of paper. The person who takes the examination is a candidate, and the person who decides how well the student has performed is the examiner.

In Nigeria, examinations are conducted at the school, state and national levels. At the school level examinations are conducted by the teachers, these are carried out on a termly basis and are called internal examinations. Information gathered at this level is used to establish what learning has taken place or understanding of what has been taught; for promotion to a higher class and to improve the teaching and learning process. At the state and national levels, which constitute external examinations, they are conducted by the state education boards and public examination bodies like WAEC, NECO, and NABTEB. External or public examinations are for the

purposes of selection, placement and certification. WAEC and NECO examinations are terminal in Nigeria, and their main purpose is certification, which forms the basis of selection into tertiary institutions (Abdulrahaman, 2017), securing of jobs of a particular cadre, and they are used as qualification to elective offices.

WAEC and NECO are sub-regional and National examinations bodies that conduct public examinations in Nigeria, established in 1952 and 1999 respectively. They are charged with conducting credible examinations and certifying students. WAEC and NECO produce annually the chief examiners' 'reports which are in-depth analyses of each annual examination. The essence of these reports is to provide feedback to the stakeholders (government, schools, teachers, parents and students) on the strengths and weaknesses of students. The perceived reasons for the weaknesses are meant to enable biology teachers guard against the re-occurrence of mistakes and deficiencies exhibited by candidates. The reports are also intended to serve for comparison of standards and performance between states and countries and to establish whether the syllabus was being adhered to. It is assumed that if teachers implement the observations and recommendations of these reports when teaching, the effort may lead to improved motivation and consequent better understanding of biology concepts which may also lead to improved performance in examinations.

Implementation means putting the observations and recommendations of the reports into practice, or the actual engagement of students in using the reports. The Chief Examiners' annual report gives a résumé of each subject area according to the number of papers written, for WAEC biology, there is Biology paper I, which is a multiple-choice (objectives) type paper. Biology II is a theory paper and Biology III is a practical paper. For NECO biology, Biology paper I is practical, Biology paper II is essay, and Biology paper III is multiple choice objective questions. The résumé for assessing biology follows the format of the National résumé found in the WAEC and NECO reports and the analysis is in-depth and very specific. General comments by both Chief Examiners on each year's paper are given and the responses to each question highlighted. The format over the years consists of: General comments on the paper as a whole such as, standard were high, rubrics were clear, questions were well framed, and marking schemes were exhaustive and adequate. Then candidates' strengths were itemized; for example, ability to follow instructions, ability to state transmutable characters in plants and to explain the term gene, hybrid, trait; candidates' weaknesses, such as, poor spelling of technical terms, poor drawings, not giving titles to diagrams, are itemized. The reports of the two major examining bodies in Nigeria may hold the answer to improving motivation of students of biology thereby addressing the perennial poor performance of students in public examinations.

Motivation is a very fundamental construct of relevance in the enterprise of education. It is critical in every learning situation, so much so that Ozbas, (2019) asserted that it affects not only how students learn but the speed with which they process learned materials. The English word 'Motivation' is derived from the Latin word 'Movere' which means 'to move' or 'to activate'. Regmi and Balak (2022) in explaining further said, the fact that initiates a person to move or activate some need is called motivation. Motivation is therefore related to, interest and completion, and is a fundamental human need. According to Brophy (1998), motivation is a theoretical construct used to explain the initiations, direction, intensity, persistence and quantity of behavior. Young (1988) defines Motivation as the process of arousing an action, sustaining the activity in process and regulating the pattern of activity. Motivation is energy that encourages an individual to demonstrate certain behavior. Whether students learn or not, what they learn, how much time they devote to it, how efficient they are at it, and the level of proficiency they reach are all partly determined by how strongly they are motivated for their school work (Hansen, 1994). It is beneficial to consider students' motivation toward learning biology because one of the factors affecting learning of biology among Secondary School Students is Low motivation (Regmi and Balak, 2022). It is hoped that using the detailed observations and recommendations of the WAEC and NECO chief examiners would motivate biology students with the consequent effect of improved

performance in terminal examinations. As Regmi and Balak opined, when students are motivated enough and guided in learning, they will be successful

This paper views the WAEC and NECO Chief Examiner's Reports as a possible intervention that can improve students' motivation in learning biology. Each year in Nigeria both examiners, release reports detailing the weaknesses and strengths of students in Biology, giving common errors, misconceptions and recommend ways to remedy the deficiencies. This research would provide empirical data concerning the implementation of the reports of WAEC and NECO Chiefs examiners and how incorporating the observations and recommendations in teaching biology might motivate Biology students to do more in their studies thereby improving their grades.

STATEMENT OF THE PROBLEM

Students' performance in the terminal examinations in Nigeria, particularly in biology has over the years been poor as reflected in the results of the national examinations. From the inception of WAEC and NECO, annual reports emanating from the analyses of each May/June, and Nov/Dec examinations have been produced and made available to schools and other stakeholders like the ministries of education. It is assumed that teachers having read the reports would use the recommendations to correct biology students' mistakes and weaknesses as observed by the WAEC and NECO Chief Examiners. The WAEC and NECO Chief Examiners have consistently lamented the poor performance of candidates in biology for more than twenty years, by using phrases like, "not satisfactory"; "downward trend"; "abysmal/dismal performance" "decline in pass rate"; "fluctuating performance"; and persistent failure"; in describing the performance of students (WAEC and NECO Chief Examiners' reports, 2016, 2017, 2018). The continuous decline in performance alongside the annual production of the Chief Examiners report which is presumed to hold the solution to low motivation and poor performance if implemented is worrisome and need to be investigated. The probable lack of implementing the recommendations of the reports of the Chief Examiners could be responsible for the continuous low motivation and consequent poor students' achievement in biology recorded in Nigeria. Reasons attributed to the low motivation include lack of understanding, poor grades (Regmi & Balak 2022), insufficient teaching and learning materials, students' absenteeism, and inadequate involvement of parents in learners' education (Ndayambaje, Bikorimana, & Nsanganwimana 2021). Researches have also shown efforts made to improve motivation in biology, such as provision of worked-examples and relevance writing to be integrated with biology contents (Mara,Kaplan, Balsai,Cromley,Perez & Dai, 2021); provision of more laboratories, availability of standard libraries, and adoption of students-centered teaching methodologies (Ihejiamazu, Obi, & Neji, 2020). However, none of the efforts has incorporated the WAEC and NECO Chief Examiners' observations and recommendations in teaching biological concepts to motivate students. It is on the strength of this that this research aimed at finding out the effects of implementing the reports of both WAEC and NECO Chief Examiners in respiration and conservation of natural resources on SS II students' motivation and achievement in Plateau State.

AIM AND OBJECTIVES OF THE STUDY

The aim of this research is to investigate the effects of the implementation of WAEC and NECO Chief Examiners' Reports on SS II biology students' motivation in Jos South, Plateau State, Nigeria. This study addressed the following objectives:

1. To find out the pre-test and post- test biology motivation levels of SS II students in the experimental and control groups.
2. To find out the effects of the implementation of the WAEC and NECO Chief examiners' reports on the biology motivation of the SS II students based on gender.
3. To find out the interaction effect of implementing the Chief Examiners' reports on male and female SS II students' motivation levels in biology.

RESEARCH QUESTIONS

1. What are the pre-test and post-test motivation levels of SS II biology students in the experimental and control groups?
2. What are the effects of the implementation of the WAEC and NECO Chief Examiners' reports on biology motivation levels of SS II students based on gender?
3. What is the interaction effect of implementing the Chief Examiners' report on male and female SS II students' motivation levels in biology?

HYPOTHESES

The following null hypotheses were stated and tested at 0.05 level of significance:

1. There is no significant difference between the post-test motivation levels of the SS II students in the experimental and control groups.
2. There is no significant difference between the post-test biology mean scores of students in the experimental group based on gender.
3. There is no significant interaction effects of treatment on the motivation mean scores of male and female SS II biology students.

METHODOLOGY

The study employs the quasi–experimental design, specifically the pre-test, post-test nonequivalent control group design. There were two basic groups; the experimental group (A) that was exposed to teaching respiration and conservation of natural resources (using any teaching method) incorporating the observations and recommendations of the WAEC and NECO Chief Examiners, and the control group (B), which was taught the same biology concepts (using any teaching method) but without consulting or using the WAEC and NECO Chief Examiners' observations and recommendations. The experimental and control groups were intact classes in separate schools, but the schools were equivalent in facilities, personnel and environment.

The population of the study comprised all the 697 (409 males, 288 females) SS II Biology students in the 2021/2022 session from the public secondary schools in Jos south Local Government Area of Plateau State. The sample comprised 105 (54 males, 51females) Biology students from two intact classes of two co-educational secondary schools from Jos South Local Government Area. School A has 84 students having 51 males and 33 females, school B consist of 45 students with 15 males and 30 females. The random sampling technique was used to select the Local Government Area to be used. The purposive sampling technique was used to select schools that met the criteria for the study. The Academic Motivation Scale for Learning Biology (AMSLB) instrument was used for data collection. The AMSLB consist of two-sections, A and B. Section A sought demographic information such as name of school and gender, while section B had 30 items, which assessed motivation for learning the respiratory system, and conservation of natural resources. AMSLB was structured and scored on a five-point Likert-scale of Strongly Agreed=5, Agree=4, Undecided=3, Disagree=2 and Strongly Disagree=1. The higher the sum total score, the higher the motivation level towards the learning of Biology. The score for each student was determined by adding the mark for each item. The results was used to categorize the students into highly motivated (scores of 60-150) and low motivation (scores of 1-59) for biology. The content validity of the AMSLB was established by subjecting the instrument to expert scrutiny from the University of Jos. Kendall's coefficient of concordance was established at 0.88 which showed that the agreement between experts in their judgment was strong. Construct validity was established for the AMSLB using factor analysis; the result revealed that the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was .895 indicating suitability of the instrument for factor analysis. The reliability for AMSLB was established using Cronbach alpha method and a coefficient of 0.98 was obtained.

RESULTS

Research Question one: What are the pre-test and post-test motivation levels of SS II biology students exposed and not exposed to WAEC and NECO Chief Examiners' recommendations?

Table 1
Pre-test and Post-test Motivation Levels of Biology Students' in the Experimental and Control Groups

Group		Pre-test		Post-test	
	N	High	Low	High	Low
Experimental	45	10 (22.2%)	35 (77.8%)	41(91.1%)	4(8.9)
Control	60	7(11.7%)	53 (88.3%)	14(23.3%)	46(76.7%)

Table 1 show the pretest and posttest levels of Biology students' motivation in the experimental and control groups. For the experimental group, 10 (22.2 %) of the students had high motivation, 35(77.8 %) had low motivation level before treatment. After treatment, 41(91.1 %) of the students had high motivation, while 4(8.9 %) had low motivation level, indicating that students' motivation towards Biology increased after implementing the chief examiners report recommendations. In the control group, 7(11.7 %) of the students had high motivation level and 53(88.3 %) had low motivation level during the pre-test. In the posttest, 14 (23.3 %) of the students had high motivation, while 46(76.7 %) had low motivation towards biology.

Research Question two: What are the pre-test and post-test motivation levels of male and female SS II biology students exposed to the WAEC and NECO Chief Examiners' recommendations?

Table 2
Pre-test and Post-test Motivation Levels of Male and Female Biology Students' in the Experimental Group

Gender		Pre-test		Post-test	
	N	High	Low	High	Low
Male	17	1(5.9%)	16(94.1%)	16(94.1%)	1(5.9%)
Female	28	9(32.1%)	19(67.9%)	25(89.3%)	3(10.7%)

Table 2 shows the pretest and posttest levels of male and female Biology students' motivation in the experimental group. For male, 1 (5.9 %) of the students had high motivation, 16(94.1 %) had low motivation level before treatment. After treatment, 16 (94.1%) of the students had high motivation, 1(5.9 %) had low motivation level. indicating that male students' motivation towards biology increased after the treatment. For the female group, 19 (67.9 %) of the students had high motivation and 9(32.1 %) had low motivation during the pre-test. In the posttest, 25 (89.3 %) of the female students had high motivation, while 3(10.7 %) had low motivation towards Biology.

Research Question three: What is the interaction effect of implementing the Chief Examiners' report on male and female SS II biology students' motivation in biology?

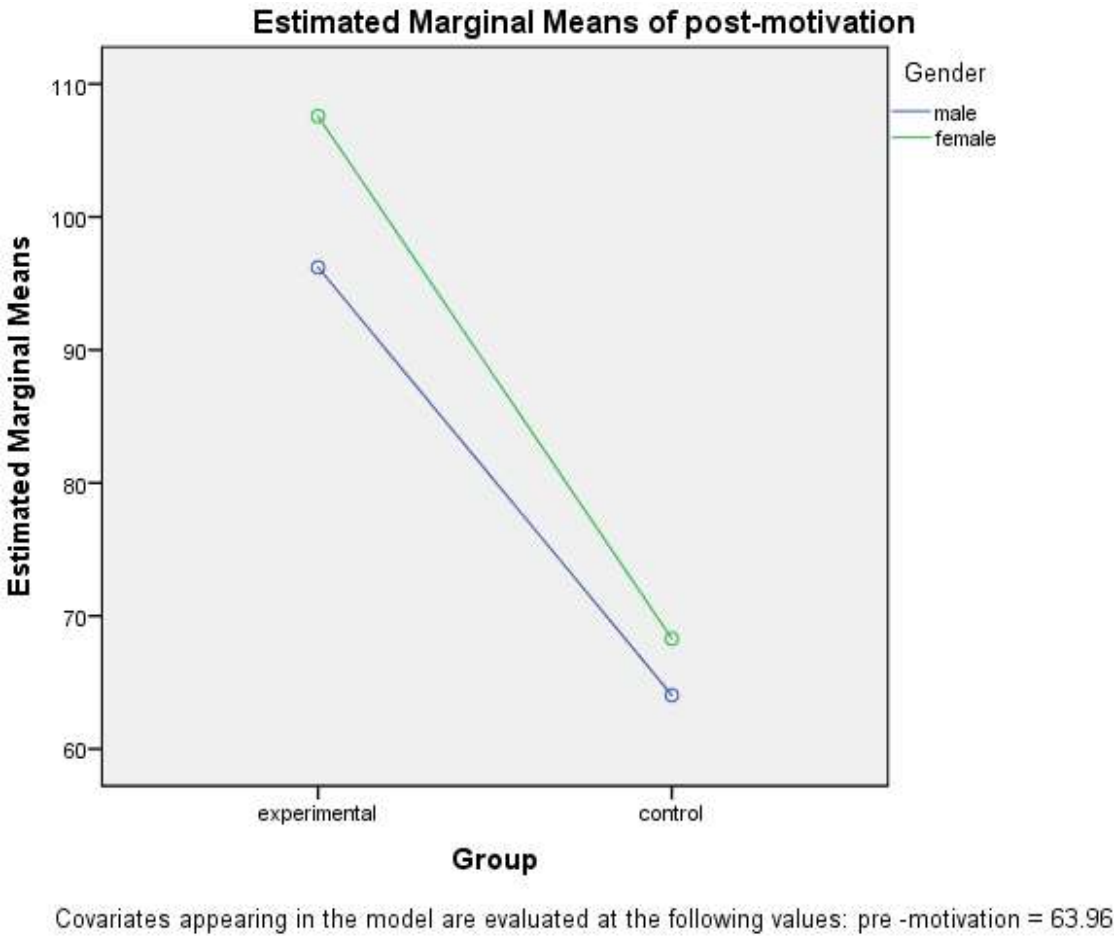

Figure 1: Interaction Effect of Treatment and Gender on Students' Motivation towards Biology

Figure 1 presents the profile plot showing that the interactive pattern for male and female students did not intercept. It further shows that the plot is extrapolated, therefore the intersection could not hold; which means that the interaction effect between treatment and gender may not be attainable.

Hypothesis One: There is no significant difference between the post-test biology motivation levels of the SS II students in the experimental and control groups.

Table 2
ANCOVA Result on Posttest Biology Motivation levels of Experimental and Control Groups

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	43321.329	2	21660.665	75.124	.000	.596
Intercept	18482.274	1	18482.274	64.100	.000	.386
Post-motivation	4476.872	1	4476.872	15.527	.000	.132
Group	35560.726	1	35560.726	123.332	.000	.547
Error	29410.061	102	288.334			
Total	775148.000	105				
Corrected Total	72731.390	104				

a. R Squared =.596 (Adjusted R Squared = .588)

Table 3
Result of Sidak Post hoc Comparison of Difference between Posttest Motivation levels of Students in the Experimental and Control Groups

I Experimental	J Control	X-difference (I – J)	Std. Error	P- value
103.17	65.76	37.41	3.37	0.000

P<0.05

Table 2 shows that F(1,102) =123.33, p < 0.05, partial η2 = .547, since the p value of 0.000 is less than 0.05 level of significance with an effect size of 55% the null hypothesis was rejected, indicating that there was a significant effect of the implementation of WAEC and NECO Chief Examiners reports on Biology students motivation . The result further reveals an adjusted R squared value of 588 which means that 58.8 percent of the variation in the dependent variable which is motivation towards Biology is explained by variation in the treatment, while the remaining is due to other factors not included in this study. The Sidak post hoc test in Table 3 confirms that the corrected difference between experimental group and control group was statistically significant, (I - J) = 37.41. Hence, we can say that the implementation of WAEC and NECO chief examiners report can help increase students' motivation towards Biology.

Hypothesis two: There is no significant difference between the post-test biology mean scores of students in the experimental group based on gender.

Table 4
Result of t-Test on the Post-test Mean Scores of Male and Female Students in the Experimental Group

Gender	N	$\bar{X}$	SD	DF	T	P-Value	α	Decision
Male	17	59.47	4.29	43	2.19	.034	0.05	Significant
Female	28	56.25	5.06					

Table 4 shows the t-Test result for male yielded a mean score of 59.47 with standard deviation of 4.29 and the female mean score was 56.25 with a standard deviation of 5.06. The result further reveals that t (43) =2.19, $p < 0.05$. Since the p value of .034 is less than the 0.05 level of significance, the null hypothesis was rejected, it can be inferred that there was a significant difference in the post-test biology motivation mean score of SS II male and female students in the experimental group in favor of males.

Hypothesis three: There is no significant interaction effect of treatment on the motivation levels of male and female SS II biology students.

Table 5
Interaction Effects of Treatment and Gender on the Motivation Mean Scores of SS II Biology Students

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	44862.357	4	11215.589	40.244	.000	.617
Intercept	19868.982	1	19868.982	71.294	.000	.416
Pre-test	3146.834	1	3146.834	11.292	.001	.101
Treatment	30815.565	1	30815.565	110.573	.000	.525
Gender	1422.651	1	1422.651	5.105	.026	.049
Treatment* Gender	298.250	1	298.250	1.070	.303	.011
Error	27869.033	100	278.690			
Total	775148.000	105				
Corrected Total	72731.390	104				

a. R Squared = .617 (Adjusted R Squared = .601)

Table 5 shows the main effect of treatment for experimental group yielded a mean of 104.00 with a standard deviation of 22.31, while control group has a mean of 65.13 and standard deviation of 14.25 ; F(1,100) =110.57, $p < 0.05$, partial $\eta 2 = .525$, since the p-value of 0.000 is less than 0.05 level of significance with an effect size of 53 % the null hypothesis was rejected, indicating that there was a significant interaction effect of treatment on the motivation of students exposed to WAEC and NECO chief examiners report.

Again, the main effect of Gender yielded a mean of 73.11 and standard deviation of 20.98 for male, while female students have a mean of 90.98 and standard deviation of 28.65; F(1,100) = 5 .11, $p < 0.05$, partial $\eta 2 = .049$, since the p- value of 0.026 is less than 0.05 level of significance with an effect size of 5 % the null hypothesis was rejected, indicating that there was a significant interaction effect of gender on the motivation of SS 11 students. The result further reveals an adjusted R squared value of .601 which means that 60.1 percent of the variation in the dependent variable which is motivation towards respiration and conservation of natural resources is explained by variation in the treatment, while the remaining 39.9% is due to other factors not included in the research. The result also revealed that there was no statistically significant interaction effect of gender and intervention on motivation which yielded F (1, 100) = 1.07, $P > 0.05$ and partial $\eta 2 = .011$.

DISCUSSION

The results show that implementing the WAEC and NECO Chief examiners' recommendations improved biology students' motivation, and there was a significant interaction effect of treatment on the motivation levels of biology students. This finding agrees with the studies of Ekici (2010), Regmi and balak (2022) who found that interventions such as worked examples, which the WAEC and NECO reports are, improved the motivation of biology students'. Oluoch, Aloka and Odongo (2018) pointed out that extrinsic motivation involves engaging in a task, so as to get external reward; they believe that this type of orientation sustains and drives behavior of individuals or learners to complete a task. Agreeing with this assertion, Firmansyah, Komala and Rusdi (2018) further explained that when students are driven by the desire/need to score highly, they can engage in diverse activities to satisfy that need. They may engage in consulting the WAEC and NECO Chief Examiners report just to meet the need of scoring high marks in science. Using the report serves as an extrinsic motivator to stimulate students to engage in the learning of Biology activity.

The implementation or putting the recommendations of the reports of WAEC and NECO Chief Examiners' into practice in order to prepare Biology Students for the S.S.C.E. Examination, is an externally (extrinsic) regulated activity, and if students now attach value, seeing this activity as important, it would lead to internalization and integration that would then lead to a self-regulated (Initiative) choice. This action has the potential of affecting the achievement of S.S. II Biology students positively which this research is focused on.

REFFERENCE

Abdulrahaman, I. I. (2017). An evaluation of the Nigeria senior secondary school biology core curriculum for revitalization of classroom teaching and learning. *Journal of Educational Policy and Entrepreneurial Research, 4,* 94-103.

Brophy, J. (1998). Motivating students to learn. Bosto, MA: McGraw Hill.

Deci, E. L., & Ryan, R. M. (2016). *Optimizing students' motivation in the era of testing and pressure: A self-determination theory perspective*. Springer. Singapore.

Ekici, G. (2010). Factors affecting biology lesson motivation of high school students. Elsevier Ltd. doi:10.1016/j.sbspro.2010.03.295

Firmansyah, F., Komala, R., & Rusdi. (2018). Self-efficacy and motivation: Improving biology learning outcomes of senior high school students. *Journal Penelidikan Biology Indonesia, 4* (3), 67-76. Retrieved November 9, 2020, from http://ejournal.umm.ac.id/index.php/jpbi

Herfferman, C. (2013). *Qualitative research approach*. Retrieved August 7, 2020, from http://www.explorable.com.

Ihejiamazu, C. C., Obi, M. B., & Neji, H. A. (2020). The effect of biology practical activities on academic performance of secondary school students in Cross River State. *European Journal of Social Sciences, 59* (1), 57-62. Retrieved from http://www.europeanjournalofsocialsciences.com/

Johnson, M. L. (2014). Achievement motivation for introductory biology. *Journal of Studies in Education, 4* (1), 67-76 Retrieved May 8, 2020, from http://macrothink.org/journal/index/phi/jse/article/view/4306/3852

.

Mara,K.R; Kaplan, A; Balsai, M.J; Cromley, J.G; Perez,T; & Dai T. (2021).How instructors can enhance biology students motivation, learning, and grades through brief relevance writing and worked–example interventions. Retrieved on 10 January 2023 from https;//doi.org/10.1128/jmbe.00110-21

Ndayambaje, J. B., Bikorimana, E., & Nsanganwimana, F. (2021). *Factors contributing to the students' poor performance in biology subject: A case study of ordinary level rural secondary school of Rwamagana district, 3*, 249-261. Retrieved July 6, 2020, from http://doi.org/10.30574/gscbps.2021.15.3.0163.

Obinne, A. D. (2011). A psychometric analysis of two major examinations in Nigeria: standard error of measurement. *International Journal of Education, 3 (*2), 137-144

Olouch, J. N., Aloka, P. J. O., & Odongo, B. C. (2018). Extrinsic motivation beliefs as predictor of students' achievement in chemistry in public secondary schools in Kenya. *International Journal of Applied Psychology, 8* (2), 23-29.