Science Process Skills and Academic Performance in Physics among Secondary School Students in Rivers South- East Senatorial District, Rivers State

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Abstract: *The study was conducted to investigate the relationship between science process skills and academic performance in physics among secondary school students in Rivers South-East Senatorial District of Rivers State. A co-relational research design was adopted for the study. The study was guided by six research questions and six hypotheses. A total of 2812 Senior Secondary Physics students from the 74 senior secondary schools in the study area formed the population of the study. The sample size for the study was 350 Physics students selected using simple random sampling technique. Two instruments were used for data collection. These include Basic Science Process skill Test (BSPST) which was used to assess students' science process skills and Physics Academic Performance Test (PAPT) for assessment of academic performance in Physics. Face and content validity of the instrument were done by two experts in Science Education and Measurement and Evaluation. Reliability of the instruments was determined using test-retest and kudereichardson-20 methods of testing reliability. Reliability coefficients of 0.82 for BSPST and 0.79 for PAPT were obtained respectively. Data gathered were analyzed using Pearson Product Moment Correlation. The result of the study showed a high, positive and significant relationship between observation skill, inference skill, communication skill, measurement skill, classification skill, prediction skill and academic performance in Physics. Based on the findings, it was recommended among others that Teachers should employ teaching strategies such as inquiry-based learning and problem-based learning that will promote basic science process skills among students.*

Keywords: *Science process skills, academic performance, physics.*

Introduction

Science is very important to technological development in any society. Knowledge of science has application in several areas of technological development in the world. In the oil sector for example, knowledge of science is applied in drilling. In the agricultural sector, knowledge of science is applied in the process of crop production and animal rearing. In the chemical industry, knowledge of science is applied for production of chemicals such as paints, cements, pharmaceutical products (drugs). Knowledge of science also finds application in the world of electronics. Rapid technological advancement in the production of electronics today hinges on knowledge of electronics in physics. Development of computers, telephones and mobile phones and other information and telecommunication technologies today all have foundation on science. In light of these contributions to

technological advancement, it can be said that science contribute meaningfully to economic development of a nation.

In light of the significant role that science plays in the technological advancement for economic growth, nations of the world give attention to the growth of science. A typical means employed to achieve this is encouragement of science education in schools from the basic schools to secondary schools and tertiary institutions. As stipulated in the Nigerian National Policy on Education by the Federal Republic of Nigeria (FRN, 2013), science education deals with the teaching and learning of science processes and principles. It is further stipulated in the policy document that the goals of science education are to inculcate an inquiring and knowing mind among individuals, production of scientists who will contribute to national development, serve as a foundation for the study of technological advancement and to provide knowledge and understanding of the physical world.

Access to science education is made available in schools through teaching and learning of science subjects and courses in basic schools, secondary schools and tertiary institutions in Nigeria. At the secondary school level, science education consists of three major subjects which are Biology, Chemistry and Physics.

Physics is one of the most fundamental natural sciences. It involves the study of universal laws, and the behaviours and relationships among a wide range of physical phenomena. Through the learning of physics, students will acquire conceptual and procedural knowledge relevant to their daily life. In addition to the relevance and intrinsic beauty of physics, a study of physics also helps students to develop an understanding of the practical applications of physics to a wide variety of other fields. With a solid foundation in physics, students should be able to appreciate the intrinsic beauty and quantitative nature of physical phenomena, and the role of physics in many important developments in engineering, medicine, economics and other scientific and technological fields.

Physics is that aspect of science that deals with the study of the fundamental structure of matter as well as its interaction in time and space (Weidner & Brown in Oleg, 2015). Physics has application in many areas. For example, Chemistry studies the interactions of atoms and molecules which are aspects of atomic and molecular physics. In Biology, Physics helps in the explanation of heat, work, and power associated within the human body. In Medicine Physics finds application in diagnostic operations such as X-rays, provides explanation for how the eye detects colour, and how lasers transmit information, how musical instruments make sounds. Also, electricity and electronics have root in physics. Furthermore, Physics provides explanation for structural stability of buildings, operation of acoustic devices and many more (Ntam, 2023).

As stipulated in the National Policy on Education by Federal Republic of Nigeria (FRN, 2013), science education deals with the teaching and learning of science processes and principles. It implies Physics as a science subject will involve the teaching and learning of the process and principles related to the understanding of fundamental structure of matter as well as its interaction in time and space. To be successful in learning science subjects of which Physics is one, students need fundamental skills regarded as science

process skills (Ekon & Eni, 2015). Science process skills according to Hill (2011) are skills needed and used by scientists to accomplish their scientific procedures. According to Paul, Emmanuel, Emmanuel, Damoeroem and David (2021) science process skills are cognitive and psychomotor skills used by scientists to identify problem, for objective inquiry, for data gathering and transformation, interpretation as well as communication of information.

Science process skills are divided into two major categories. These are the basic and integrated science process skills. The basic science process skills which include: observing, communication, classification, measurement, inference and prediction skills. The integrated science process skills include: defining operationally, controlling variables, formulating hypotheses, interpreting data, experimenting and formulating models (Ekon & Eni, 2015). Observing skill is the utilization of the five senses to gather information about an object or event. Observing is the fundamental Science Process Skills as it is essential for developing other Science Process Skills. Communicating skill is the utilization of written and spoken words, graphs, tables, diagrams and other media of information presentation to convey a message or an idea. Good communication skill is needed by students to be able to share their observations with others. This implies that communication must be clear through the use of very descriptive words for common understanding. Classification skill is the ability to put objects into categories or groups based on common or similar characteristics or criteria. Measurement skill involves using both standard and non-standard measurements or estimates to describe the dimension of an object or event. Inference skill involves drawing conclusion or interpretation about some events from observation and data. Prediction skill has to do with stating the outcome of an event based on a graph (Ekon & Eni, 2015).

Students' academic performance is very vital to any teaching and learning process. The academic performances of students is one of the elements used to judge the success of an instructional delivery process. Higher academic performance among students could be a pointer to the success of a teaching and learning process. Academic performance could be used to describe how much knowledge students have gained or acquired from a teaching and learning process. This implies that students' academic performance in Physics could be used to ascertain how well students have learnt the subject in the course of instruction.

The literature shows that a number of factors contribute to academic performance among students. Some of such factors include: classroom environment (Aransi, 2019); teacher characteristics (Daso, 2013) and students' characteristics (Kaur & Prajapati, 2022) among others. Science process skills is a characteristic of the individual students as it describes students' skills in observation, communication, classification, measurement, inference and prediction. The present study therefore seeks to ascertain the relationship between science process skills and students' academic performance in Physics in secondary schools in Rivers South-East Senatorial District of Rivers State.

1.2   Statement of the Problem

Science process skills are indispensable tools to scientists because they are pre-requisite for understanding of scientific concepts and principles. Studies have pointed out that technological breakthroughs are predicated on systematic and effective use of science process skills (Esomonu & Onunkwo, 2004). West African Senior School Certificate Examination (WASSCE) chief examiner's report (2021 & 2022) pointed out that students poor performance in Physics is due to their poor skills in laboratory practical activities. This could be attributed to lack of science process skills which is paramount in engaging in practical activities in the laboratory. Academic performance in Physics has been linked with science process skills (Kamba, Giwa, Libata & Wakkala, 2018). It is against this backdrop and the quest to ascertain the connection between science process skills and academic performance in Physics that the researcher has decided to embark on this study to investigate the relationship between science process skills and academic performance in Physics among secondary school students in Rivers South-East Senatorial District of Rivers State.

Purpose of the Study

The purpose of the study was to investigate the relationship between science process skills and academic performance in Physics among secondary school students in Rivers South-East Senatorial District of Rivers State.

Research Questions

The study provided answers to the following research questions.
1. What is the relationship between observation skill and academic performance in Physics among students of secondary schools in Rivers South-East Senatorial District of Rivers State?
2. Is there any relationship between inference skill and academic performance in Physics among students of secondary schools in Rivers South-East Senatorial District of Rivers State?
3. What is the relationship between communication skill and academic performance in Physics among students of secondary schools in Rivers South-East Senatorial District of Rivers State?
4. Is there any relationship between measurement skill and academic performance in Physics among students of secondary schools in Rivers South-East Senatorial District of Rivers State?
5. What is the relationship between classification skill and academic performance in Physics among students of secondary schools in Rivers South-East Senatorial District of Rivers State?
6. Is there any relationship between prediction skill and academic performance in Physics among students of secondary schools in Rivers South-East Senatorial District of Rivers State?

Hypotheses

The study was guided by the following six hypotheses which were tested at 0.05 alpha level.

1.   There is no significant relationship between observation skill and academic performance in Physics among students of secondary schools in Rivers South-East Senatorial District of State.
2.   There is no significant relationship between inference skill and academic performance in Physics among students of secondary schools in Rivers South-East Senatorial District of Rivers State.
3.   There is no significant relationship between communication skill and academic performance in Physics among students of secondary schools in Rivers South-East Senatorial District of Rivers State.
4.   There is no significant relationship between measurement skill and academic performance in Physics among students of secondary schools in Rivers South-East Senatorial District of Rivers State.
5.   There is no significant relationship between classification skill and academic performance in Physics among students of secondary schools in Rivers South-East Senatorial District of Rivers State.
6.   There is no significant relationship between prediction skill and academic performance in Physics among students of secondary schools in Rivers South-East Senatorial District of Rivers State.

Methodology

The study adopted a correlational survey research design. According to Taiye, Nwineh and Igharo (2023), correlational design is a research design where the researcher intends to investigate the relationship between two variables. In the present study, the intention was to ascertain the relationship between science process skills and academic performance in Physics. Consequently, correlational design was considered appropriate. The population of the study comprised 2,812 physics students from 74 senior secondary schools in the study area. A simple random technique was used to sample 350 physics students for the study. The instruments used in data collection were Basic Science Process Skill Test (BSPST) which comprises the basic science process skills which was adapted from Maranan (2017) and Physics Academic performance Test (PAPT). Face and content validity of the instruments were carried out by experts in science education and measurement and evaluation. Test-retest and Kuderrichardson-20 methods of reliability were employed to test the stability and internal consistency of the items. A reliability coefficient of 0.82 for BSPST and 0.79 for PAPT respectively were obtained. The research questions were answered using Pearson Product Moment Correlation Coefficient (r) to determine the relationship between basic science process skills and academic performance in Physics. Values of r between 0 and 0.19 were considered negligible. Values 0f r ranging from 0.20 to 0.49 were considered weak. Values of r ranging from 0.50 to 0.69 were considered average while values of r ranging from 0.70 to 1.00 were considered high. This is based on Uzoagulu (2011) classification for coefficient of correlation. The hypotheses were tested by comparing r-calculated value with r-critical value at 0.05 alpha level. If r-calculated value is greater than r-critical value, the

hypothesis was rejected. On the other hand, if r-calculated value is less than r-critical value, the hypothesis was accepted.

Results

Research Question 1: What is the relationship between observation skill and academic performance in Physics among students of secondary schools in Rivers South-East Senatorial District of Rivers State?

Table 1: Relationship between Observation Skill and Academic Performance in Physics

Variables	N	$\sum X$	$\sum Y$	$\sum X^2$	$\sum Y^2$	$\sum XY$	r-cal
Observation Skill (X)	350						
Academic Performance in Physics (Y)	350	1774	10408	10686	374646	60872	0.773

Result from Table 1 shows the result for the relationship between observation skill and academic performance in Physics among students in senior secondary schools in Rivers South-East Senatorial District. The result shows a correlation coefficient (r = 0.773). This value shows that there exists a high relationship between observation skill and academic performance in Physics. Again, a positive value of correlation coefficient shows that there exists a positive relationship between observation skill and academic performance in Physics. This means that the higher the observation skill, the higher the academic performance in Physics among students in the study area.

Research Question 2: Is there any relationship between inference skill and academic performance in Physics among students of secondary schools in Rivers South-East Senatorial District of Rivers State?

Table 2: Relationship between Inference Skill and Academic Performance in Physics

Variables	N	$\sum X$	$\sum Y$	$\sum X^2$	$\sum Y^2$	$\sum XY$	r-cal
Inference Skill (X)	350	1745	10408	10483	374646	59980	0.751
Academic Performance in Physics (Y)	350						

Result from Table 2 shows the result for the relationship between inference skill and academic performance in Physics among students in senior secondary schools in Rivers South-East Senatorial District. The result shows a correlation coefficient (r = 0.751). This value shows that there exists a high relationship between inference skill and academic performance in Physics. Again, a positive value of correlation coefficient shows that there exists a positive relationship between inference skill and academic performance in Physics. This means that the higher the inference skill, the higher the academic performance in Physics among students in the study area.

Research Question 3: What is the relationship between communication skill and academic performance in Physics among students of secondary schools in Rivers South-East Senatorial District of Rivers State?

Table 3: Relationship between Communication Skill and Academic Performance in Physics

Variables	N	$\sum X$	$\sum Y$	$\sum X^2$	$\sum Y^2$	$\sum XY$	r-cal
Communication Skill (X)	350	1731	10408	10145	374646	58761	0.717
Academic Performance in Physics (Y)	350						

Result from Table 3 shows the result for the relationship between communication skill and academic performance in Physics among students in senior secondary schools in Rivers South-East Senatorial District. The result shows a correlation coefficient (r = 0.717). This value shows that there exists a high relationship between communication skill and academic performance in Physics. Again, a positive value of correlation coefficient shows that there exists a positive relationship between communication skill and academic performance in Physics. This means that the higher the communication skill, the higher the academic performance in Physics among students in the study area.

Research Question 4: Is there any relationship between measurement skill and academic performance in Physics among students of secondary schools in Rivers South-East Senatorial District of Rivers State?

Table 4: Relationship between Measurement Skill and Academic Performance in Physics

Variables	N	$\sum X$	$\sum Y$	$\sum X^2$	$\sum Y^2$	$\sum XY$	r-cal	r-crit
Measurement Skill (X)	350	1708	10408	10130	374646	58746	0.736	0.195
Academic Performance in Physics (Y)	350							

Result from Table 4 shows the result for the relationship between measurement skill and academic performance in Physics among students in senior secondary schools in Rivers South-East Senatorial District. The result shows a correlation coefficient (r = 0.736). This value shows that there exists a high relationship between measurement skill and academic performance in Physics. Again, a positive value of correlation coefficient shows that there exists a positive relationship between measurement skill and academic performance in Physics. This means that the higher the measurement skill, the higher the academic performance in Physics among students in the study area.

Research Question 5: What is the relationship between classification skill and academic performance in Physics among students of secondary schools in Rivers South-East Senatorial District of Rivers State?

Table 5: Relationship between Classification Skill and Academic Performance in Physics

Variables	N	$\sum X$	$\sum Y$	$\sum X^2$	$\sum Y^2$	$\sum XY$	r-cal
Classification Skill (X)	350						
Academic Performance in Physics (Y)	350	1738	10408	10320	374646	58988	0.696

Result from Table 5 shows the result for the relationship between classification skill and academic performance in Physics among students in senior secondary schools in Rivers South-East Senatorial District. The result shows a correlation coefficient (r = 0.696). This value shows that there exists a high relationship between classification skill and academic performance in Physics. Again, a positive value of correlation coefficient shows that there exists a positive relationship between classification skill and academic performance in Physics. This means that the higher the classification skill, the higher the academic performance in Physics among students in the study area.

Research Question 6: Is there any relationship between prediction skill and academic performance in Physics among students of secondary schools in Rivers South-East Senatorial District of Rivers State?

Table 6: Relationship between Prediction Skill and Academic Performance in Physics

Variables	N	$\sum X$	$\sum Y$	$\sum X^2$	$\sum Y^2$	$\sum XY$	r-cal
Prediction Skill (X)	350	1780	10408	10828	374646	61296	0.778
Academic Performance in Physics (Y)	350						

Result from Table 4.6 shows the result for the relationship between prediction skill and academic performance in Physics among students in senior secondary schools in Rivers South-East Senatorial District. The result shows a correlation coefficient (r = 0.778). This value shows that there exists a high relationship between prediction skill and academic performance in Physics. Again, a positive value of correlation coefficient shows that there exists a positive relationship between prediction skill and academic performance in Physics. This means that the higher the prediction skill, the higher the academic performance in Physics among students in the study area.

Hypothesis 1: There is no significant relationship between observation skill and academic performance in Physics among students of secondary schools in Rivers South-East Senatorial Districts of Rivers State.

Table 7: Significance of Relationship between Observation Skill and Academic Performance in Physics

Variables	N	$\sum X$	$\sum Y$	$\sum X^2$	$\sum Y^2$	$\sum XY$	r-cal	r-crit	Df	Decision
Observation Skill (X)	350	1774	10408	10686	374646	60872	0.773	0.195	348	Rejected

Academic Performance in Physics (Y)	350					

Table 7 shows the result for the test of hypothesis 1. The result shows a calculated value of r (r-cal = 0.773) and a critical r-value (r-crit = 0.195). Since the calculated value is greater than the critical value, the hypothesis is rejected. This implies that there is a significant relationship between observation skill and academic performance in Physics among students of secondary schools in Rivers South-East Senatorial District of Rivers State.

Hypothesis 2: There is no significant relationship between inference skill and academic performance in Physics among students of secondary schools in Rivers South-East Senatorial District of Rivers State.

Table 8: Significance of Relationship between Inference Skill and Academic Performance in   Physics

Variables	N	$\sum X$	$\sum Y$	$\sum X^2$	$\sum Y^2$	$\sum XY$	r-cal	r-crit	df	Decision
Inference Skill (X)	350									
Academic Performance in Physics (Y)	350	1745	10408	10483	374646	59980	0.751	0.195	348	Rejected

Table 8 shows the result for the test of hypothesis 2. The result shows a calculated value of r (r-cal = 0.751) and a critical r-value (r-crit = 0.195). Since the calculated value is greater than the critical value, the hypothesis is rejected. This implies that there is a significant relationship between inference skill and academic performance in Physics among students of secondary schools in Rivers South-East Senatorial Districts of Rivers State.

Hypothesis 3: There is no significant relationship between communication skill and academic performance in Physics among students of secondary schools in Rivers South-East Senatorial Districts of Rivers State.

Table 9: Significance of Relationship between Communication Skill and Academic Performance in   Physics

Variables	N	$\sum X$	$\sum Y$	$\sum X^2$	$\sum Y^2$	$\sum XY$	r-cal	t-crit	df	Decision
Communication Skill (X)	350									
Academic Performance in Physics (Y)	350	17311	10408	10145	374646	58761	0.717	0.195	348	Rejected

Table 9 shows the result for the test of hypothesis 3. The result shows a calculated value of r (r-cal = 0.717) and a critical r-value (r-crit = 0.195). Since the calculated value is greater than the critical value, the hypothesis is rejected. This implies that there is a significant relationship between communication skill and academic performance in Physics among students of secondary schools in Rivers South-East Senatorial District of Rivers State.

Hypothesis 4: There is no significant relationship between communication skill and academic performance in Physics among students of secondary schools in Rivers South-East Senatorial District of Rivers State.

Table 10: Significance of Relationship between Measurement Skill and Academic Performance in Physics

Variables	N	$\sum X$	$\sum Y$	$\sum X^2$	$\sum Y^2$	$\sum XY$	r-cal	r-crit	df	Decision
Measurement Skill (X)	350									
Academic Performance in Physics (Y)	350	1708	10408	10130	374646	58746	0.736	0.195	348	Rejected

Table 10 shows the result for the test of hypothesis 4. The result shows a calculated value of r (r-cal = 0.736) and a critical r-value (r-crit = 0.195). Since the calculated value is greater than the critical value, the hypothesis is rejected. This implies that there is a significant relationship between measurement skill and academic performance in Physics among students of secondary schools in Rivers South-East Senatorial District of Rivers State.

Hypothesis 5: There is no significant relationship between classification skill and academic performance in Physics among students of secondary schools in Rivers South-East Senatorial District of Rivers State.

Table 11: Significance of Relationship between Classification Skill and Academic Performance in Physics

Variables	N	$\sum X$	$\sum Y$	$\sum X^2$	$\sum Y^2$	$\sum XY$	r-cal	r-crit	df	Decision
Classification Skill (X)	350									
Academic Performance in Physics (Y)	350	1738	10408	10320	374646	58988	0.696	0.195	348	Rejected

Table 11 shows the result for the test of hypothesis 5. The result shows a calculated value of r (r-cal = 0.696) and a critical r-value (r-crit = 0.195). Since the calculated value is greater than the critical value, the hypothesis is rejected. This implies that there is a significant relationship between classification skill and academic performance in Physics among students of secondary schools in Rivers South-East Senatorial District of Rivers State.

Hypothesis 6: There is no significant relationship between prediction skill and academic performance in Physics among students of secondary schools in Rivers South-East Senatorial District of Rivers State.

Table 12: Significance of Relationship between Prediction Skill and Academic Performance in   Physics

Variables	N	$\sum X$	$\sum Y$	$\sum X^2$	$\sum Y^2$	$\sum XY$	r-cal	r-crit	df	Decision
Prediction Skill (X)	350									
Academic Performance in Physics (Y)	350	1780	10408	10828	374646	61296	0.778	0.195	348	Rejected

Table 12 shows the result for the test of hypothesis 6. The result shows a calculated value of r (r-cal = 0.778) and a critical r-value (r-crit = 0.195). Since the calculated value is greater than the critical value, the hypothesis is rejected. This implies that there is a significant relationship between prediction skill and academic performance in Physics among students of secondary schools in Rivers South-East Senatorial District of Rivers State.

Discussion of Findings

The first research question aimed at ascertaining if there existed a significant relationship between observation skill and academic performance in Physics among students of secondary schools in Rivers South-East Senatorial District of Rivers State. The result revealed that the relationship was positive, high and significant. This implies that the higher the observation skill possessed by students, the higher their academic performance in Physics. The result corroborates the result by Kamba, Giwa, Libata and Wakkala (2018) who found a significant positive relationship between students' knowledge of science process skills and their attitudes towards physics. Positive attitude towards a subject could lead to enhanced academic performance (Tutal & Yazar, 2022). The result also agrees with the result by Njoka (2020) who found that science process skills contributed positively to students' academic performance in Physics. The result however negates the result by Adah and Nsikhe (2020) who found no significant effect of observation skill on students' academic performance in practical Biology.

The second research question aimed at ascertaining the relationship between inference skill and academic performance in Physics among students of secondary schools in Rivers South-East Senatorial District of Rivers State. The result revealed that the relationship was positive, high and significant. This implies that the higher the inference skill possessed by students, the higher their academic performance in Physics.The result corroborates the result by Adah and Nsikhe (2020) who found a significant effect of inference drawing on students' academic performance in practical Biology in Calabar District of Cross River State, Nigeria. The result also agrees with the result by Bayat and

Çetinkaya (2020) that inference making ability of students significantly predicted their reading comprehension skill in Turkey. The result also agrees with that of Abraham, Rajasekharan and Anirudhan (2021) who found a positive relationship between inference skill and average scholastic academic performance among preadolescent students attending English medium school in India.

The third research question aimed at ascertaining the relationship between communication skill and academic performance in Physics among students of secondary schools in Rivers South-East Senatorial District of Rivers State. The result revealed that the relationship was positive, high and significant. This implies that the higher the communication skill possessed by students, the higher their academic performance in Physics. The result corroborates the result by Abdi and Davoudi (2015) who found that a significant positive relationship existed between communication skill and academic achievement among students in Iran. The result however, negates the result by Shah, Syeda and Naseer (2020) who examined the influence of communication skill on academic performance of university students of University of Sargodha, Pakistan. Shah, Syeda and Naseer (2020) found that students' communication skill had no statistically significant effect on students' academic achievement (performance).

The fourth research question aimed at ascertaining the relationship between measurement skill and academic performance in Physics among students of secondary schools in Rivers South-East Senatorial District of Rivers State. The result revealed that the relationship was positive, high and significant. This implies that the higher the measurement skill possessed by students, the higher their academic performance in Physics. The result corroborates the result by Adah and Nsikhe (2020) who investigated the interaction effect of measurement skill as an aspect of Basic science process skills on students' academic performance in Practical Biology in Calabar District of Cross River State, Nigeria. Adah and Nsikhe (2020) found a significant effect of measurement skill on students' academic performance in Practical Biology in the study area. The result however, disagrees with that of Maranan (2017) who found no significant correlation between measurement skill and students' academic performance in Science in Catalina National High School, Candelaria,Quezon of Philippines.

The fifth research question aimed at ascertaining the relationship between classification skill and academic performance in Physics among students of secondary schools in Rivers South-East Senatorial District of Rivers State. The result revealed that the relationship was positive, high and significant. This implies that the higher the classification skill possessed by students, the higher their academic performance in Physics. The result corroborates the result by Adah and Nsikhe (2020) who investigated the interaction effect of measurement skill as an aspect of Basic science process skills on students' academic performance in Practical Biology in Calabar District of Cross River State, Nigeria. The result however, disagrees with that of Maranan (2017) who found no significant correlation between classification skill and students' academic performance in Science in Catalina National High School, Candelaria,Quezon of Philippines.

The sixth research question aimed at ascertaining the relationship between prediction skill and academic performance in Physics among students of secondary schools in

Rivers South-East Senatorial District of Rivers State. The result revealed that the relationship was positive, high and significant. This implies that the higher the prediction skill possessed by students, the higher their academic performance in Physics. The result corroborates the result by Maranan (2017) who found a significant relationship between predicting skill and analyzing dimension of academic performance among students of Catalina National High School, Candelaria,Quezon of Philippines. The result also corroborates that of Ogbogu and Osuafor (2021) who found a significant and positive relationship between basic science process skills and academic performance in Biology among students in Onitsha Education District of Anambra State. The result further agrees with the result by Suman (2020) who found a positive and significant relationship between science process skills and achievement in science of secondary school students in India.

Conclusion

The study sought to find out the relationship between basic science process skills and students' academic performance in Physics in secondary schools in Rivers South-East Senatorial District of Rivers State. Based on the findings of the study, the following conclusions were drawn: observation skill had positive, high and significant relationship with academic performance in Physics among students of secondary schools in Rivers South-East Senatorial District of Rivers State; inference skill had positive, high and significant relationship with academic performance in Physics among students of secondary schools in Rivers South-East Senatorial District of Rivers State; communication skill had positive, high and significant relationship with academic performance in Physics among students of secondary schools in Rivers South-East Senatorial District of Rivers State; measurement skill had positive, high and significant relationship with academic performance in Physics among students of secondary schools in Rivers South-East Senatorial District of Rivers State; classification skill had positive, high and significant relationship with academic performance in Physics among students of secondary schools in Rivers South-East Senatorial District of Rivers State; prediction skill had positive, high and significant relationship with academic performance in Physics among students of secondary schools in Rivers South-East Senatorial District of Rivers State.

Recommendations

Based on the findings of the study, the following recommendations were made.
1. Teachers should employ teaching strategies such as inquiry-based learning and problem-solving based learning that will promote basic science process skills among students. Such would enhance students' basic science process skills and in turn enhance their academic performance in Physics.
2. Schools should organize internal training using experienced teachers as resource persons to train younger teachers on using adequate teaching strategies towards building basic science process skills among students.
3. Regular quizzes and debates should be organized within the school on the subject of basic science process skills. Such would encourage in-depth study towards mastering basic science process skills among students.

4.   Teachers should engage in self-development to enhance their knowledge on how to help students build basic science process skills. This will enhance their capacity for instructional delivery towards inculcating basic science process skills among students which will in turn contribute positively to better academic performance in Physics.
5.   Students should be given opportunities to do regular presentation in class. This will enhance their communication skill which could in turn enhance academic performance in Physics.
6.   Teachers should engage students in critical thinking exercise to enhance their thinking   ability towards developing science process skills for better academic performance in   Physics.

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