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Utilization of Zoom Meeting in Physics Education in Public Secondary Schools in Ogbia Local Government Area, Bayelsa State

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Abstract

This research work is on Utilization of zoom meeting application in physics education in Bayelsa State. Zoom meeting is an online meeting technology which provides virtual, online meeting application facilitated with the zoom platform, involving real time video conferencing, chat features, and collaborative tools. The researcher used a quasi - experimental design method to determine if SS II physics students use zoom meeting technologies to enhance their academic achievement in public secondary schools in the local government area under study. The population of this research comprised of all SS II (2,612) physics students in five secondary schools in Ogbia local government area of Bayelsa State, while the sample size consisted of 120 SS II Physics students. Purposive sampling technique was used. A physics achievement test instrument was used for data collection, the hypotheses were tested at 0.05 significance using an independent sample t-test. The researcher found out that the use of zoom meeting as an instructional strategy for teaching physics had a positive impact on the student's academic achievement. The researcher, among other things, recommended that: Physics students in the 21st century should embrace the use of zoom meeting application in instructional delivery, physics students and teachers should have positive attitude towards the use of zoom meeting application in learning, government of Bayelsa State should provide physics students with functional laptops to aid their integration of ICT via zoom meeting applications in learning physics, government of Bayelsa state should also provide steady electrical power supply to aid the use of computers during instructional development, parents should provide their students with money for use in buying data, this will enable the physics students to access the online zoom meeting lessons, educational technologists should organize workshops on 'Utilization of zoom meeting application ' for the physics teachers and students.

Keywords: Zoom meeting application, Physics Education
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1. Introduction

Physics is a science subject that is offered in senior secondary school level as well as in tertiary institutions. It is a natural science of matter, involving the study of matter, its fundamental constituents, it's motion and behaviour through space and time, and the related entities of energy and force (Anyakocha, 2010; Tenney, 2018). Instructional delivery in physics in Nigeria schools have undergone various challenges: Time limitation, the use of chalk-talk method of instructional delivery that is not very reinforcing or motivating the physics students, lack of relevant instructional facilities, and so on (ABuche, 2006; Nkweke, 2013). Interestingly enough, instructional technological medium such as zoom meeting, goggle meet, WebEx etc. are, in recent times, available for physics teachers and students to integrate in their teaching and learning encounter as part of effort to keep tide with development effort in the 21st century as to facilitate teaching in physics.

Zoom meeting application is one of the applications that is mostly used as a long -distance- communication medium and which tries to integrate online meetings through audio, video and mobile collaboration with relevant features like telephone calls, webinars, presentations, and many more. It provides users good opportunities for screen-sharing and supporting communication needs with many people without direct contact (Suardi, 2020 and Siefta, 2021).

1.2 Statement of the problem

Educators, parents, administrators and other stakeholders in the educational industry are generally concerned about the academic performance of their children. Parents really expect improved transition and growth of their children at the end of each term, semester, academic year or season as do teachers that their students perform better, and not fail examinations administered on them. But, in most Bayelsa state schools, it was observed that the academic performance of students in physics is a disappointment, hence a bad news (Tenney, 2018 and

Nkweke, 2013). The researcher argues that, most physics students have no effective access to online instructional delivery, of which the researcher intends to, find out, among other things, if this is due to lack of either the means or the instruments occasioned by economical and digital divide (UNESCO, 2020).

1.3 Purpose of the study

The main purpose of this study is to determine the impact of zoom meeting on academic achievement of SS II physics students.

The study specifically intends to:

1. Determine the difference in the mean achievement score of SS II physics students taught physics using zoom meeting and those taught using conventional (lecture) method
2. Determine the difference in mean achievement score of male and female students taught physics using zoom meeting application.

1.4 Research questions

1. What is the difference in the mean achievement score of SS II students taught physics using zoom meeting and those taught using conventional (lecture) method?
2. What is the difference in the mean achievement score of male and female students taught physics using zoom meeting application?

1.5 Hypothesis

Ho 1: There is no significant difference in mean achievement score of students taught physics using zoom meeting application and those taught using conventional lecture method in Ogbia L.G.A.

Ho 2: There is no significant difference in the mean achievement score of male and female students taught physics using zoom meeting in public secondary schools in Ogbia local government area.

2.0 Methodology

2.1 Research Design: The researcher adopted a quasi-experimental research design to carry out the investigation on utilization 0f zoom meeting application in physics education in secondary schools in Ogbia local government area, Bayelsa State.

2.2 Population of the study: The study population comprised of 2, 612 drawn from all the public secondary schools in Ogbia during the 2023/2024 academic session.

2.3 Sample Size/Sampling Techniques: The sample size consist of 120 physics students (27 male students and 27 female students) from two schools. A purposive sampling techniques was used to draw the sample population for the study from SS II physics classes.

2.4 Instrument for Data Collection: The instrument employed for data collection for the study was an 'Achievement Test'.

2.5 Validity of instrument: The research instrument was validated by an experienced Test and Measurement expert as well as a veteran Educational Technologist. They offered useful device which helped the researcher to elicit the required information and data for the study.

2.6 Reliability of the study: The reliability of the instrument was calculated using split-half method. The Pearson Product Moment Correlation statistics was adopted to determine the reliability of the instrument. The reliability score of physics gave the co-efficient index of 0.82, this indicates that the items were reliable within acceptable limits.

2.7 Method of Data Analysis: The data collected from the study were subjected to statistical analysis. The research questions were answered using descriptive statistics of mean and standard deviation while the null hypothesis was tested at 0.05 level of significance using independent H-test.

3.0 Result and Discussion

3.1 Research Question 1: What is the difference in the mean achievement score of SS II students taught physics using zoom meeting application and those taught using conventional lecture method?

Table 1. Mean and Standard Deviation Scores of Physics Students Taught Nature of Matter Using Zoom Meeting Application and Conventional Method

Method	N	$\bar{x}$	SD
Zoom Method.	53	30.17	5.88
Conventional (lecture) Method	57	24.75	4.60

The result in table 1 above indicates that the mean achievement score of physics students taught nature of matter using zoom meeting method is 30.17 with standard deviation 5.88 while physics students taught nature of matter using conventional (lecture) method got a mean achievement score of 24.75 and standard deviation is 4.60. This implies that physics students taught with the use of zoom meeting application or method prefer learning in modern times with such emerging teaching - learning approach as zoom instructional delivery as oppose to.

3.2 Research Question 2: What is the difference in the mean achievement score of male and female students taught physics using zoom meeting application?

Table 2. Mean and Standard Deviation Scores of Male and Female Physics Students Taught Nature of Matter Using Zoom Meeting Application.

Gender	N	x̄	SD
Male	27	28.22	4.19
Female	27	28.52	6.69

Results in Table 2 above indicates the mean achievement score of male students taught nature of matter theory using Zoom Meeting Application is 28.22 and standard deviation is 4.19 while that of female students taught nature of matter using zoom meeting application is 28.52 and standard deviation is 6.69. This implies that female students tend to achieve higher than male students taught nature of matter using zoom meeting application.

Hypothesis

The stated hypothesis was tested using independent t-test at 0.05/level of significance

Hypothesis 1: There is no significant difference in mean achievement score of students taught physics using zoom meeting application and those taught using conventional (lecture) method.

Table 3. t-test Analysis of Physics Students Taught Nature of Matter Using Zoom Meeting Application and Conventional Method of instructional Development.

Method	N	x̄	SD	Df	t-value	t-critical	Decision
Zoom Meeting Application.	53	30.17	5.88	108	5.26	1.66	S
Conventional (lecture) method	57	24.75	4.60				

S = Significant

From Table 3 (+ - value = 5.26, df = 108 and t-critical = 1.98) is obtained. The calculated t-value 5.26 is greater than the t-critical value 1.66, the null hypothesis which states that there is no significant difference in the mean achievement of students taught nature of matter using zoom meeting application and conventional teaching method is rejected. Therefore, there is a significant difference in the mean achievement of physics students taught nature of matter using zoom meeting application and conventional (lecture) method.

Hypothesis 2: There is no significant difference in the mean achievement score of male and female students taught physics using zoom meeting application in public secondary schools in Ogbia local government area of Bayelsa state.

Table 4: t-test Analysis of Physics Male and Female Students Score Taught Nature of Matter Using Zoom Meeting Application.

Gender	N	x̄	SD	Df	t-value	t-critical	Decision
Male	27	28.22	4.19	52	0.19	2.02	NS
Female	27	28.52	6.69				

NS = Not Significant

Looking at table 4 above, t-value = 0.19, Df =52 and t-critical = 202) is obtained. The t-value 0.19 is less than the t-critical value 2.02, the mull hypothesis which states that there is no significant difference in the mean achievement score of male and female students taught physics using zoom meeting application in nature of matter in public secondary schools in Ogbia local government of Bayelsa state is retained. The discussion is based on research questions and hypothesis.

4.0 Discussion

The research findings on physics students taught nature of matter theory using the zoom meeting application and conventional (lecture) method showed a significant difference between physics students' achievement in favour of those taught using zoom meeting application. This findings agrees with some earlier findings of Means,

Toyama, Murphy, Bakia and Jones, 2010), found out that the quality of online lesson presentation involving the use of zoom meeting instructional approach influences improved learning.
It helps to cater for students learning style much as it helps to arouse interest of students in being part of the present ICT world. Besides, Nkweke (2013) discovered that the use of zoom meeting application during instructional development can aid students' mastery learning since such lesson presentation can be recorded and replayed any time such a student wants.

The findings on male and female physics students taught using zoom meeting application revealed that male students performed better than their female counterparts not significant. This is in consonance with the studies carried out by Suardi, (2020) who found significant difference among male and female students taught using zoom meeting application over their counterparts taught using the conventional method of instructional delivery.

5.0 Conclusion

Based on the findings of the study, the researcher found out that using zoom meeting application to teach physics students can lead to improve academic achievement than using conventional method.

6.0 Recommendations

- Physics students in the 21st century should embrace the use of zoom meeting application delivery.
- Physics Students and teachers should have positive attitude towards the use of zoom meeting application in learning
- Government of Bayelsa state should provide physics students with functional laptops to aid their integration of ICT via zoom meeting applications in learning physics
- Government of Bayelsa state should also provide steady electrical power supply to aid the use of laptop during teaching and learning session
- Parents should provide their students with money for use in buying data, this will enable the physics students to access the online zoom meeting lessons.
- Educational Technologists should organize workshops on 'Utilization of zoom meeting application ' for the physics teachers and students.

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