

11 th INTERNATIONAL BLACK SEA COASTLINE COUNTRIES SCIENTIFIC RESEARCH CONFERENCE

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EDITOR

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**AWARENESS AND USAGE OF ELECTRONIC RESOURCES IN INTERACTIVE IN
INTERACTIVE-ENGAGEMENT AND ANALOGY-ENHANCEMENT
INSTRUCTIONAL STRATEGIES AS DETERMINANT OF THE ACHIEVEMENT
OF STUDENTS IN BIOLOGY**

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ABSTRACT

The study investigated the "Biology teacher's awareness and usage of electronic resources in interactive – engagement and analogy – enhancement instructional strategies as determinant of the achievement of students in Biology". The population of the study comprises of all biology teachers in Senior Secondary Schools in Minna metropolis. Five public secondary schools and private secondary schools were considered. The findings of the study also investigated the level of usage of electronic resources by biology teachers in interactive – engagement and analogy – enhancement instructional strategies. From the result of the analysis the respondents agreed upon the fact that, they neither often use electronic resources in interactive – engagement and analogy – enhancement instructional strategies, not find easy in usage of electronic resources while adopting interactive – engagement and analogy – enhancement instructional strategies. The effect of this is that there is inadequate or no use of electronic resources while adopting interactive – engagement and analogy – enhancement instructional strategies. P-value of 0.89 was obtained after the pilot test. As a result, there was no statistical significant difference between male and female biology teachers' responses on awareness of assimilation of electronic resources in interactive – engagement and analogy – enhancement instructional strategies. Based on the conclusion the following recommendations were made; more awareness program should be organized to sensitize biology teachers on the assimilation of electronic resources in interactive – engagement and analogy – enhancement instructional strategies, The teachers as well as secondary school management should be encouraged on adequate assimilation of electronic resource in interactive – engagement and analogy – enhancement instructional strategies, challenges and factors affecting adequate assimilation of electronic resources in interactive – engagement and analogy – enhancement instructional strategies cited in the study should be looked into, in order to improve teaching and learning, regular training and re-training of biology teachers should be organize to improve their knowledge on usage of electronic resources in interactive – engagement and analogy – enhancement instructional strategies.

Keywords: Interactive-Engagement, Analogy-Enhancement, e-Resources

INTRODUCTION

The students' inability to conceptualize basic concepts in biology as a subject, especially, the abstract concepts in Senior Secondary Schools (SSS) Biology which have been perceived as difficult concepts include genetics, ecology, homeostasis, central nervous system, biology practical's amongst others. These have been observed by the researchers for almost over twenty years of teaching the subject in secondary schools. One wonders whether the use of alternative teaching approach like ER may be a tool towards solving these problems. Obomanu and Adaramola (2016) observed that chemical representation of symbols and molecules are not only difficult for students to understand, but are also abstract and cannot be understood by the learners. Therefore, it is necessary to examine other methods of teaching science in order to get a suitable strategy that would lead to effective teaching and learning of biology among the students, hence, the necessity for IEAEIS, along with ER, in teaching and learning sciences.

The interactive-engagement instructional strategy (IEIS) stems from the constructivist theory of learning by discovery in a sociocultural context, in which the teacher is a facilitator (Taber, 2014). IEIS is designed to promote conceptual understanding through minds-on and sometimes hands-on activities which yield immediate feedback through discussions with peers and instructors. Previous studies have indicated that an interactive approach to teaching has a number of positive effects on students' motivation and learning (Okezie and Onyekweodiri, 2014; Ezrailson, Kamon, Loving and McIntyre, 2016; Nbina and Viko, 2016).

Moreover, according to Ezrailson, *et al.* (2016), a model of IEIS involves a pre-class assignment on concept to be taught, which is a significant shift from post class assignment usually given as homework. This instructional strategy also incorporates concept testing and an instant Student-Response System which in the study was flashcard response system. This according to Okezie and Onyekweodiri (2014) enhances self-efficacy and stimulates minds-on activities. The questions are carefully crafted multiple choice questions on the pre-class assignment previously given to the class. The students then engage in class-wide discussion in small groups of three to five (depending on the class size), this fosters collaboration and emphasizes conceptual learning (Lorenzo, Crouch and Mazur, 2013).

Analogy-enhanced instructional strategy (AEIS) is another teaching instructional strategies considered in this study. This instructional strategy adapts the concept of storytelling into teaching which according to Isaac (2016) creates interest and reduces anxiety. This instructional strategy uses concepts that students are familiar with to provide an analogical bridge to an unfamiliar concept thus motivating and provoking the interest of students (Agummuoh, 2015). It has been found to significantly improve students' performance and comprehension in the teaching of biology, environmental education and physical chemistry. Not much has been done on the use of analogy to teach biology and especially on its effect on self-efficacy of students. It is grounded in the structure-mapping theory for analogy, propounded by (Apostolos and Panagiotis, 2013). It is basically a teaching strategy that involves a mapping mechanism which helps a learner construct new knowledge on the basis of his or her identification of similarities between different concepts (Govende and Maistry, 2016). Analogical thinking extracts useful structural and relational information from a repertoire of familiar instances or events (the analogue or base domain) and maps it on to the unfamiliar science concept (which is called the target). Despite the significance impact of both instructional strategies, the advancement in technology as given rise to the need for the use of electronic resources in teaching and learning in order to enhance instructional strategies.

ER are digitized information, facilitated by computers, network connectivity, electricity, other peripheral components and most importantly human beings. It comes in different formats including text, videos, audio, maps, graphics, tables, pictures, etc. Govende and Maistry (2016) indicated that ER include full text documents, CDROMs, resources available on the internet such as e-journals, Online Public Access Catalogues (OPACs) and other computer based electronic networks. For the purposes of this study, ER refer to OPAC, Dspace and

academic databases subscribed to by several Universities, for instance, University of Cape Coast (UCC) (Franklina, 2017) Federal University of Technology, Minna, Nigeria, (FUT, 2019). The UCC Sam Jonah Library subscribe to a wide range of electronic databases that make available full-text articles to support teaching, learning and research activities. The application of Information and Communication Technologies (ICTs) has changed the way the researchers and faculty access and utilize information resources. As a result, ER have become an integral part of the information resources for academicians and researchers and can substitute print resources (Ayodele, 2014).

The access to the internet by the users unfolds the utilization of e resources (Tripathi, Sonkar and Rajbanshi, 2016). Generally, it is apparent that the print age is paving way to electronic information resources. Since the early 1990s, several initiatives aimed to increase the availability of ER have resulted in a significant increase in the number of African institutions subscribing to these ER for teaching and learning. Thus, the current research intends to investigate the extent of availability and utilization of ER in the teaching and learning of sciences in schools.

STATEMENT OF THE PROBLEM

Science Education is said to be the most appropriate and fastest vehicle for the planned transformation of any society (Jegede, 2016). Despite its importance to mankind, the efforts of researchers to improve its teaching and learning is said to be too low and educators are incessantly concerned about the need to improve students' performance especially in the sciences which remains low. Obiekwe and Adegoke (2016) reported that all is not well with science teaching in Nigerian secondary schools, and noted that science teaching lays more emphasis on content and the use of "chalk and talk" method neglecting the practical activity methods which enhance teaching and learning.

The senior secondary school students' performance, in biology for the past years has not been encouraging. The West African Senior School Certificate Examination (WASSCE) biology result as indicated that during 2015, 2016 and 2017 students' performance were below average with the percentages as 50.91, 55.34 and 50.70 respectively, while their performance increased between 2018 and 2019 with the percentages of 72.34 and 62.49 respectively. Despite the increase in the students' percentages, the results are still not satisfactory enough, and this can be improved upon. School science programs and technology should not be seen as a replacement for laboratory but rather as an enhancement. The electronic instructional resources contain series of medium for passing and impacting knowledge, which teachers could use to enhance their teaching and improve students' performance in sciences. Hence, it is important to find out whether biology teachers are aware of these resources and whether they use them therefore, it is based on these views that the researcher sought to find out the awareness and utilization of ER in IEAEIS as determinant of the performance of students in biology.

PURPOSE OF THE STUDY.

The main purpose of the study is to investigate into the awareness and usage of ER in IEAEIS as determinant of the performance of students in biology. Specifically, the objectives of the study are to:

1. Find out the level of awareness of biology teachers on integration of ER in IEAEIS.
2. Find out the level of usage of ER by biology teachers in IEAEIS.
3. Determine the factors affecting the usage of ER by biology teachers in IEAEIS.
4. Determine the strategies needed to enhance the integration of ER by biology teachers in IEAEIS.

RESEARCH QUESTIONS

The following research questions guided the study:

1. What is the level of awareness of biology teachers on integration of ER in IEAEIS?
 2. What is the level of usage of ER by biology teachers in IEAEIS?
 3. What are the factors affecting the usage of ER by biology teachers in IEAEIS.
-

The biology teachers are fully aware of the significance importance of integration of electronic resources in interactive – engagement and analogy – enhancement instructional strategies	23	2.50	0.86	Agreed
Teachers are not aware of integration of electronic resources in interactive – engagement and analogy – enhancement instructional strategies	23	2.34	0.38	Disagreed
I am only aware of the usage of integration of electronic resources for ICT instructional delivery.	23	2.39	0.53	Disagreed
I have no idea on the use of integration of electronic resources in interactive – engagement and analogy – enhancement instructional strategies.	23	1.78	0.14	Disagreed
It has never occurred to me to use integration of electronic resources in interactive – engagement and analogy – enhancement instructional strategies.	23	3.17	0.11	Agreed
I believe integration of electronic resources in interactive – engagement and analogy – enhancement instructional strategies makes lesson efficient	23	3.06	0.15	Agreed
The use of electronic resources in interactive – engagement and analogy – enhancement instructional strategies enhance, classroom management	23	3.89	0.25	Agreed
Integration of electronic resources in interactive – engagement and analogy – enhancement instructional strategies makes lesson effective	23	2.53	0.30	Agreed
Integration of electronic resources in interactive – engagement and analogy – enhancement instructional strategies provides an Information Technology oriented cycle in the classroom	23	2.59	0.24	Agreed
Integration of electronic resources in interactive – engagement and analogy – enhancement instructional strategies give more avenue for student-teachers interactive session	23	2.95	0.28	Agreed
Grand Mean	23	2.71	0.32	Agreed

Decision ≥ 2.50

Table 1. Shows the biology teachers responses on their awareness on integration of electronic resources in interactive – engagement and analogy – enhancement instructional strategies. From the result it was agreed upon by the respondents that they are fully aware of the importance of integration of electronic resources in interactive – engagement and analogy – enhancement instructional strategies, though it never occur to them to use integration of electronic resources in interactive – engagement and analogy – enhancement instructional strategies, it was believe integration of electronic resources in interactive – engagement and analogy – enhancement instructional strategies makes lesson efficient, enhance classroom management, makes lesson effective, provides an Information Technology oriented cycle in the classroom, give more avenue for student-teachers interactive session with mean value (\bar{x}) of 2.50, 3.17, 3.06, 3.89, 2.43, 2.59 and 2.95 respectively.

On the other hand, respondent disagree on the fact that; they are not aware of integration of electronic resources in interactive – engagement and analogy – enhancement instructional strategies, but only aware of the usage of integration of electronic resources for ICT instructional delivery, having no idea on the use of integration of electronic resources in interactive – engagement and analogy – enhancement instructional strategies with mean value of 2.34, 2.39 and 1.78 respectively. The grand mean of 2.711 also indicate adequate biology teachers on integration of electronic resources in interactive – engagement and analogy – enhancement instructional strategies.

Research Question Two: What are the level of usage of electronic resources by biology teachers in interactive – engagement and analogy – enhancement instructional strategies?

Table 2. Level of usage of electronic resources by Biology Teachers in interactive – engagement and analogy – enhancement instructional strategies

Statement	N	\bar{x}	SD	Remark
Biology teachers often use electronic resources in interactive – engagement and analogy – enhancement instructional strategies	23	2.31	0.42	Disagreed
Biology Teachers don't find it ease in usage of electronic resources while adopting interactive – engagement and analogy – enhancement instructional strategies.	23	2.93	0.36	Agreed
Teachers prefer the use of electronic resources while adopting interactive – engagement and analogy – enhancement instructional strategies	23	2.78	0.43	Agreed
Electronic resources help the teachers classroom efficient and effective they use it most often while adopting interactive – engagement and analogy – enhancement instructional strategies	23	2.69	0.43	Agreed
Most teachers don't find the ease use of electronic resources while adopting interactive – engagement and analogy – enhancement instructional strategies	23	2.46	0.25	Agreed
The integration of electronic resources in interactive – engagement and analogy – enhancement instructional strategies draw student attention to focus on the classes	23	3.75	0.13	Agreed
Teachers hardly integrate electronic resources while adopting interactive – engagement and analogy – enhancement instructional strategies	23	2.99	0.46	Agreed
Teachers perform all instructional activities with electronic resources	23	2.16	0.33	Disagreed
Electronic resources technicality, makes it usage for engagement and analogy – enhancement instructional strategies dissatisfactory hence, teachers don't use it.	23	2.91	0.42	Agreed
Teachers found it hard to use electronic resources for engagement and analogy – enhancement instructional strategies dissatisfactory, as the student does not flow with me	23	2.83	0.36	Agreed
Teachers don't have access to electronic resources for engagement and analogy – enhancement instructional strategies, hence discourage it usage.	23	2.58	0.43	Agree
Grand Mean	23	2.61	0.37	Agreed

Decision ≥ 2.50

Table 2 unveils the level of usage of electronic resources by biology teachers in interactive – engagement and analogy – enhancement instructional strategies. From the outcome of the analysis the respondent agreed upon the fact that, they neither often use electronic resources in interactive – engagement and analogy – enhancement instructional strategies, not find it ease in usage of electronic resources while adopting interactive – engagement and analogy – enhancement instructional strategies. They prefer the use of electronic resources while adopting interactive – engagement and analogy – enhancement instructional strategies, teachers hardly integrate electronic resources while adopting interactive – engagement and analogy – enhancement instructional strategies, electronic resources technicality, makes its usage for engagement and analogy – enhancement instructional strategies

dissatisfactory hence, teachers don't use it, as the students do not flow with me, they don't have access to electronic resources for engagement and analogy – enhancement instructional strategies, hence discourage its usage, with mean value (\bar{x}) of 2.31, 2.93, 2.78, 2.99, 2.91, 2.83 and 2.58. it can be deduced that biology teachers hardly integrate electronic resources while adopting interactive – engagement and analogy – enhancement instructional strategies.

Research Question Three

What are the factors affecting the usage of electronic resources by Biology Teachers in interactive – engagement and analogy – enhancement instructional strategies.

Table 3. Factors affecting the usage of electronic resources by Biology Teachers in interactive – engagement and analogy – enhancement instructional strategies.

Statement	N	\bar{x}	SD	Remark
Inadequate availability of require electronic resources to Biology Teachers in interactive – engagement and analogy – enhancement instructional strategies	23	2.57	0.54	Agreed
Inadequate access to computer or laptops	23	2.82	0.79	Agreed
Inadequate access to multimedia projector	23	3.32	0.67	Agreed
Insufficient power supply	23	3.49	0.31	Agreed
Lack of support by the school management on full integration of electronic resources while on interactive – engagement and analogy – enhancement instructional session with students.	23	3.26	0.60	Agreed
Lack of fund to the school for full adoption of ICT in instructional delivery	23	3.48	0.71	Agreed
The curriculum does not support the use of electronic resource in instructional delivery	23	2.57	0.54	Agreed
Technical know – how of the teacher on use of electronic resources in instructional delivery	23	2.82	0.79	Agreed
Lack training and enlighten of teachers on the integration of electronic resources in instructional delivery	23	3.32	0.67	Agreed
Government policies on education and teaching convention	23	3.49	0.31	Agree
Grand mean	23	3.11	0.59	Agreed

Decision ≥ 2.50

Table 3 shows the respondents responses on factors affecting the usage of electronic resources by Biology Teachers in interactive – engagement and analogy – enhancement instructional strategies. The result unveils that; inadequate availability of require electronic resources to Biology Teachers, inadequate access to computer or laptops, inadequate access to multimedia projectors, insufficient power supply, lack of support by the school management on full integration of electronic resources while on interactive – engagement and analogy – enhancement instructional session with students, lack of fund to the school for full adoption of ICT in instructional delivery, the curriculum does not support the use of electronic resources in instructional delivery, technical know – how of the teachers on use of electronic resources in instructional delivery, lack of training and enlighten of teachers on the integration of electronic resources in instructional delivery and government policies on education and teaching convention are factors affecting the integration of electronic resources by Biology Teachers in interactive – engagement and analogy – enhancement instructional strategies with mean value (\bar{x}) of 2.57, 2.82, 3.32, 3.49, 3.26, 3.48, 2.57, 2.82, 3.32 and 3.49 respectively.

Research Question Four

What are the strategies needed to enhance the integration of electronic resources by Biology Teachers in interactive – engagement and analogy – enhancement instructional strategies.

Table 4. Strategies needed to enhance the integration of electronic resources by Biology Teachers in interactive – engagement and analogy – enhancement instructional strategies.

Statement	N	\bar{x}	SD	Remark
Provision of require electronic resources to Biology Teachers in interactive – engagement and analogy – enhancement instructional strategies-	23	3.32	0.67	Agreed
provision and access to computers or laptops-	23	3.49	0.31	Agreed
Access to multimedia projectors-	23	3.26	0.60	Agreed
Sufficient and reliable power supply-	23	3.48	0.71	Agreed
Full support by the school management on integration of electronic resources while on interactive – engagement and analogy – enhancement instructional session with students-	23	3.64	0.63	Agreed
Provision of adequate fund to the school for full adoption of ICT in instructional delivery-	23	3.32	0.67	Agreed
Injection of curriculum that support the use of electronic resources in instructional delivery-	23	3.49	0.31	Agreed
Improving the Technical know – how of the teachers on the use of electronic resources in instructional delivery-	23	3.26	0.60	Agreed
Training and re-training of teachers on the significance of integration of electronic resources in instructional delivery-	23	3.48	0.71	Agreed
Improved government policies on education and teaching- convention that will encourage integration of electronic resources in instructional delivery-	23	3.64	0.63	Agreed
Grand mean	23	3.44	0.58	Agreed

Table 4 unveils the respondents' responses on strategies needed to enhance the integration of electronic resources by Biology Teachers in interactive – engagement and analogy – enhancement instructional strategies. The result on the table revealed that; provision of required electronic resources to Biology Teachers in interactive – engagement and analogy – enhancement instructional strategies, provision of access to computers or laptops, access to multimedia projectors, sufficient and reliable power supply, full support by the school management on integration of electronic resources while on interactive – engagement and analogy – enhancement instructional session with students, provision of adequate fund to the school for full adoption of ICT in instructional delivery, injection of curriculum that support the use of electronic resource in instructional delivery, improving the Technical know – how of the teachers on the use of electronic resources in instructional delivery, training and re-training of teachers on the significance of integration of electronic resources in instructional delivery and improved government policies on education and teaching convention that will encourage integration of electronic resources in instructional delivery are needed to enhance the integration of electronic resources by Biology Teachers in interactive – engagement and analogy – enhancement instructional strategies with mean (\bar{x}) value of 3.32, 3.49, 3.26, 3.48, 3.64, 3.32, 3.49, 3.26, 3.48 and 3.64 respectively.

Analysis of Research Hypotheses

Research Hypothesis One

There is no significance difference between male and female Biology Teachers responses on the level of awareness on integration of electronic resources in interactive – engagement and analogy – enhancement instructional strategies.

Table 5. t-test analysis for differences between male and female Biology Teachers responses on the level of awareness on integration of electronic resources in interactive – engagement and analogy – enhancement instructional strategies

Variable	N	df	\bar{x}	SD	t-val	P-value	Decision
Male	16	21	2.89	0.34	1.36	0.89	NS
Female	7		2.66	0.21			

*NS = Not Significant

Table 5 shows the t- test analysis for difference between male and female Biology Teachers responses on the level of awareness on integration of electronic resources in interactive – engagement and analogy – enhancement instructional strategies. The outcome of the result shows that the male teachers average means responses is 2.89 and the SD= 0.344, df = 21, while the female teachers mean scores is 2.66, SD = 0.21, with p-value of 0.89, therefore the null hypothesis; which was no difference between male and female Biology Teachers responses on the level of awareness on integration of electronic resources in interactive – engagement and analogy – enhancement instructional strategies was not rejected. Hence, there was no statistical significant difference between male and female Biology teachers’ responses on awareness on integration of electronic resources in interactive – engagement and analogy – enhancement instructional strategies.

Research Hypothesis Two

There is no significance difference between male and female Biology Teachers responses on the level of usage of electronic resources in interactive – engagement and analogy – enhancement instructional strategies.

Table 6. t-Test analysis for difference between male and female Biology Teachers responses on level of usage of electronic resources in interactive – engagement and analogy – enhancement instructional strategies.

Variable	N	df	\bar{x}	SD	t-val	P-value	Decision
Male	16	21	2.69	0.29	4.21	0.07	NS
Female	7		2.25	0.33			

*NS = Not Significant

Table 6 shows the t- test analysis for difference between male and female Biology Teachers responses on the level of usage of electronic resources in interactive – engagement and analogy – enhancement instructional strategies. The outcome of the result shows that the male teachers average mean responses is 2.69 and the SD= 0.29, df = 21, while the female teachers mean scores is 2.25, SD = 0.33, with p-value of 0.07, therefore the null hypothesis; which is no difference between male and female Biology Teachers responses on the level of usage of electronic resources in interactive – engagement and analogy – enhancement instructional strategies was not rejected. Hence, there was no statistical significant difference between male and female biology teachers’ responses on integration of electronic resources in interactive – engagement and analogy – enhancement instructional strategies.

Research Hypothesis Three

There is no significance difference between male and female Biology Teachers responses on the factors affecting the usage of electronic resources in interactive – engagement and analogy – enhancement instructional strategies.

Table 7. t-Test analysis for difference between male and female Biology Teachers responses on the factors affecting the usage of electronic resources in interactive – engagement and analogy – enhancement instructional strategies.

Variable	N	df	\bar{x}	SD	t-val	P-value	Decision
Male	16		3.09	0.08			
Female	7	21	3.14	0.13	2.69	0.15	NS

*NS = Not Significant

Table 7 shows the t- test analysis for difference between male and female Biology Teachers responses on the factors affecting the usage of electronic resources in interactive – engagement and analogy – enhancement instructional strategies. The outcome of the result shows that the male teachers average mean responses is 3.09 and the SD= 0.08, df = 21, while the female teachers mean scores is 3.14, SD = 0.13, with p-value of 0.15, therefore the null hypothesis; which is no difference between male and female Biology Teachers responses on the factors affecting the usage of electronic resources in interactive – engagement and analogy – enhancement instructional strategies was not rejected. Hence, there was no statistical significant difference between male and female Biology Teachers responses on the factors affecting the usage of electronic resources in interactive – engagement and analogy – enhancement instructional strategies.

4.2.3 Research Hypothesis Four

There is no significance difference between male and female Biology Teachers responses on strategies needed to enhance the integration of electronic resources in interactive – engagement and analogy – enhancement instructional strategies.

Table 8. t-Test analysis for difference between male and female Biology Teachers responses on strategies needed to enhance the integration of electronic resources in interactive – engagement and analogy – enhancement instructional strategies.

Variable	N	df	\bar{x}	SD	t-val	P-value	Decision
Male	16		3.39	0.08			
Female	7	21	3.55	0.13	2.69	0.15	NS

*NS = Not Significant

Table 8 shows the t- test analysis for difference between male and female Biology Teachers responses on strategies needed to enhance the integration of electronic resources in interactive – engagement and analogy – enhancement instructional strategies. The outcome of the result shows that the male teachers average mean responses is 3.39 and the SD= 0.08, df = 21, while the female teachers mean scores is 3.55, SD = 0.13, with p-value of 0.15, therefore the null hypothesis; which is no difference between male and female Biology Teachers responses on strategies needed to enhance the integration of electronic resources in interactive – engagement and analogy – enhancement instructional strategies was not rejected. Hence, there was no statistical significant difference between male and female Biology Teachers responses on strategies needed to enhance the integration of electronic resources in interactive – engagement and analogy – enhancement instructional strategies.

DISCUSSION OF FINDINGS

The findings of the study unveiled awareness of Biology Teachers on integration of electronic resources in interactive – engagement and analogy – enhancement instructional strategies. From the result it was agreed upon by the respondents that they are fully aware of the significance importance of integration of electronic resources in interactive – engagement and analogy – enhancement instructional strategies, it was believe that integration of electronic resources in interactive – engagement and analogy – enhancement instructional strategies makes lesson efficient, enhance classroom management, makes lesson effective, provides an Information Technology oriented cycle in the classroom, give more avenue for students and teachers interactive session. This implies that Biology Teachers are aware of integration of electronic resources in interactive – engagement and analogy – enhancement instructional strategies. The result also goes with that of (Etuibon, 2014)

The findings of the study also disclosed the level of usage of electronic resources by Biology Teachers in interactive – engagement and analogy – enhancement instructional strategies. From the outcome of the analysis the respondents agreed upon the fact that, they neither often use electronic resources in interactive – engagement and analogy – enhancement instructional strategies, not find it easy in the usage of electronic resources while adopting interactive – engagement and analogy – enhancement instructional strategies. The implication of this is that there is inadequate or no use of electronic resources while adopting interactive – engagement and analogy – enhancement instructional strategies. The findings is similar to that of (Oladejo et al., 2011).

The findings also show the factors affecting the usage of electronic resources by the Biology Teachers tin interactive – engagement and analogy – enhancement instructional strategies. The result unveils that; inadequate availability of require electronic resources to Biology Teachers in interactive – engagement and analogy – enhancement instructional strategies, inadequate access to computers or laptops, inadequate access to multimedia projectors, insufficient power supply, lack of support by the school management on full integration of electronic resources while on interactive – engagement and analogy – enhancement instructional session with students, lack of fund to the school for full adoption of ICT in instructional delivery, the curriculum does not support the use of electronic resources in instructional delivery among others. This is in agreement with findings of (Ayodele, 2014 & Etuibon, 2014).

Finally, the findings of the study unveiled the strategies needed to enhance the integration of electronic resources by Biology Teachers in interactive – engagement and analogy – enhancement instructional strategies. The result revealed that; provision of require electronic resources to Biology Teachers in interactive – engagement and analogy – enhancement instructional strategies, provision of access to computers or laptops, access to multimedia projectors, sufficient and reliable power supply, full support by the school management on integration of electronic resources while on interactive – engagement and analogy – enhancement instructional session with students, provision of adequate fund to the school for full adoption of ICT in instructional delivery among others. This finding is in line with that of (Onasanya et al., 2011; Ayodele, 2014; Etuibon, 2014).

The study investigated the awareness and usage of electronic resources in interactive – engagement and analogy – enhancement instructional strategies as determinant of the achievement of students in Biology. The findings of the study also disclosed the level of usage of electronic resources by Biology Teachers in interactive – engagement and analogy – enhancement instructional strategies. From the outcome of the analysis the respondents agreed upon the fact that, they neither often use electronic resources in interactive – engagement and analogy – enhancement instructional strategies, not find it easy in usage of electronic resources while adopting interactive – engagement and analogy – enhancement instructional strategies. The implication of this is that there is inadequate or no use of electronic resources while adopting interactive – engagement and analogy – enhancement instructional strategies. p-value of 0.89, therefore the null hypothesis; which was no difference between male and

female Biology Teachers responses on the level of awareness of on integration of electronic resources in interactive – engagement and analogy – enhancement instructional strategies was not rejected.

Conclusion

This study is target at investigating into the awareness and usage of electronic resources in interactive – engagement and analogy – enhancement instructional strategies as determinant of the achievement of students in Biology. From the findings of the study it is concluded that; the Biology Teachers are fully aware of the significance importance and use of electronic resources in interactive – engagement and analogy – enhancement instructional strategies.

Similarly, from the findings of the study it was concluded that the Biology Teachers neither often use electronic resources, nor find it easy in the usage of electronic resources while adopting the instructional strategies. The implication of this is that there is inadequate or no use of electronic resources.

It was also concluded that; inadequate availability of require electronic resources to Biology Teachers in interactive – engagement and analogy – enhancement instructional strategies, inadequate access to computers or laptops, inadequate access to multimedia projectors, insufficient power supply, lack of support by the school management on full integration of electronic resources among others are the factors affecting the usage of electronic resources by Biology Teachers in interactive – engagement and analogy – enhancement instructional strategies.

Finally, from the findings of the study it was concluded that; provision of require electronic resources to Biology Teachers in interactive – engagement and analogy – enhancement instructional strategies, provision of access to computers or laptops, access to multimedia projectors, sufficient and reliable power supply, full support by the school management on integration of electronic resources on interactive – engagement and analogy – enhancement instructional session with students, among others, are strategies needed for full integration of electronic resources.

RECOMMENDATIONS

Based on the conclusion above the following recommendations were made;

1. More awareness program should be organized to sensitize Biology Teachers on the integration of electronic resource in interactive – engagement and analogy – enhancement instructional strategies.
2. The teachers as well as secondary school management should be encourage on the adequate integration of electronic resources in interactive – engagement and analogy – enhancement instructional strategies.
3. Challenges and factors affecting adequate integration of electronic resources in interactive – engagement and analogy – enhancement instructional strategies cited in the study should be looked into in order to improve teaching and learning.
4. Regular training and re-training of Biology Teachers should be organize to improve their knowledge on usage of electronic resources in interactive – engagement and analogy – enhancement instructional strategies cited in the study should be looked into, in order to improve teaching and learning.

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