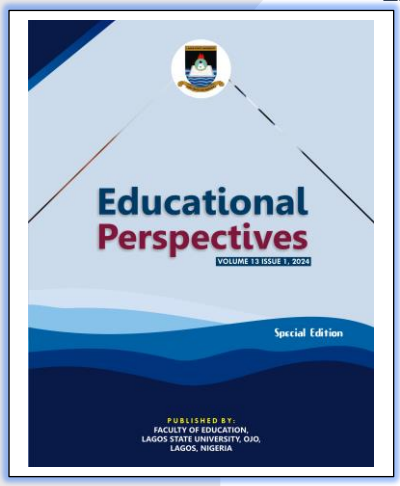

Utilising an edutainment approach in instruction to determine gender issues, students' interests and attitudinal factors in Biology in secondary school

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ABSTRACT

Edutainment combines education and entertainment to make learning enjoyable, it aims at helping students achieve academic goals effortlessly. The study explored how edutainment could enhance students' interest and attitudes toward Biology by transforming abstract concepts into engaging activities. This could improve the learning of Biology since studies show that there is declining interest in science subjects stems from their abstract and complex nature. The study involved 60 Senior Secondary II students from two intact classes in a private school in Lagos State, selected via purposive sampling. A quasi-experimental design was adopted for the study. Data were collected through the Biology Achievement Test (BAT), consisting of 20 past WAEC questions on digestion, and a student opinion questionnaire. Analysis tools included mean, standard deviation, percentage, and ANOVA. The test re-test's reliability coefficient was 0.96. With the edutainment method, results revealed no significant difference in male and female students' academic performance. The study concluded that edutainment fosters active participation across genders and encourages students to pursue science subjects. It recommended integrating edutainment into teaching to create engaging instructional methods that enhance interest and performance in science.

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Introduction

There are a series of new forms of instructional approaches that are emerging rapidly daily to improve instruction, among them is edutainment. Edutainment is a term that brings about the amalgamation of education, and entertainment, some level of amusement and guidance could be required to bring about quality instruction. The focus of this approach is to bring enjoyment to the process of learning. The combination of education and entertainment is known as edutainment therefore edutainment has been defined as an application compounded with educational aims and measurements then providing learners with quality facts regarding the value of life, using resources and methods and having a good time with the way of creating and having experience (Aksakala, 2014).

The term edutainment was developed by Bob Heyman while producing documents for the National Geographic Society in the United States of America. Edutainment means education and entertainment. It consists of instructional techniques which engage and motivate the learners as well as enhance learning; it can be attributed to innovative educational technologies that can enhance future education (Chilingaryan, and Zvereva, 2020). Edutainment techniques could be in various forms, such as games, movie scenes, shows, museums, zoos, and comedic drama, especially by using computers to create fun for children in learning and bring about child-computer interaction (Wirawan, Muhammad, & Agushinta 2013)

Edutainment method of teaching launches students into better instructional methods in different categories of subject. This method offers students access to watch and participate in the process of instruction. It is an indisputable fact that the traditional methods of teaching are now obsolete and inappropriate. Despite the impact the trend seems to have on instruction, there is still the problem of teachers and schools not being able to afford modern scientific equipment so it should be realised that bringing new trends like edutainment would not only solve part of the challenges faced by teachers it will encourage students learning (Kricina 2015).

Edutainment is a fun instructional technique; it improves the learners' academic achievement as well as turns scientific concepts could be turned into entertaining events or activities. For edutainment to be effective training of students is essential, this would lead to students' capability for self-directed learning and self-growth. Though at the initial stage learners' ability may be low to learn entertainment, with constant practice learners' existing behaviour changes could be modified thus leading to improvement in cognitive behavioural and affective domains **(**Vlachopoulos and Makri 2017). There are many reasons why students have difficulties in learning science, the nature of science itself and its teaching methods, the overloaded curriculum, the abstract and interdisciplinary nature of scientific concepts and difficulties with the textbooks are some of such factors preventing students from learning science effectively (Zeidan, 2010),

Students' diminishing interest in learning science could be connected to the curriculum content being overloaded and not generally related to employability, the lack of opportunity to include topics of interest, the abstract nature of the mode of instruction especially when it does not give room for clear prospect that could lead to complete creativity (Okolie, Nwosu and Mlanga 2019).

This kind of notion and alienation could make science subjects become evaded subjects. In Nigeria for instance, it is a fact that within a short time from now very few students will offer Biology because Biology is no more a compulsory subject in the school curriculum, and this would have a great impact on science subjects in schools. To

boost students' interest in science subjects' new modes of instruction like edutainment would be very apt. Lack of interest among students not only threatens the production of the next generation of scientists, but more importantly, impedes students' attitude from becoming scientifically literate, as they would unlikely or even unable to engage with important science-related societal issues (Swarat, Ortony, and Revelle 2012).

Kumar and Pandey (2021) are of the view that the problem of female education is a matter of urgency, female education is one of the great predicaments that face the global community, and it has been observed that gender inequality affects females' rights, responsibilities, opportunities and capabilities, including their access to and treatment in school. According to Coleman, (2017), solutions to this problem include addressing the cultural bias against putting girls in school, eradicating gender-based violence, bettering infrastructure deficiencies, and increasing female role models.

From the cultural perspective, the barriers faced by girls with low educational attainment vary by country and culture which makes educational attainment to be very difficult. The barriers differ, which cut across individual/household levels where poverty; the low perceived value of girls' education; gendered traditional practices; early marriage; early pregnancy; lack of parental support for education; death or illness of parents; and lack of interest in school which could link to above-mentioned factors and some other related factors (Hanlon, 2019).

Several studies concerning underdeveloped countries reveal that girls are underrepresented in the fields of science and technology, especially at secondary and tertiary levels of education. It was also identified that a basic distinction between men and women which is socially and culturally determined creates unequal power relations in social life (Alam, 2011).

Given the above assertion, stakeholders in the educational sector should come up with devices that would bring about equity among genders thus making the teaching and learning of science more impactful and ensuring that the girl child is not left behind. Heidari, Babor, De Castro, Tort, and Curno, (2016) established that the move is expected to address missed opportunities for innovation, understand the underlying differences and similarities, explore applicability, uptake and impact of technological innovations and get a deeper insight into cognitive variability that would lead to more innovative approaches and better solutions to meet the needs of society.

It has been noted that Nigerian students are not manifesting scientific skills as required and there has not been a great improvement in their achievement in science subjects despite the fast rate of scientific and technological development that is ongoing in the diaspora. Notable in this is that a lot of students find some science subjects very complex to understand. Some students perceived some topics like Hereditary, Genetics, and Ecology as difficult concepts (Agboghoroma and. Oyovwi, 2015). Responsible for this among other factors is that most schools lag in terms of facilities, equipment and unqualified teaching staff which invariably affect students' achievement in science both at the junior and senior secondary school levels. (Alabi 2017) Biology is a natural science that involves the study of plants and other living organisms. It has been observed by teachers, that a low percentage of questions are being answered correctly thus wondering why students have difficulties in answering Biology questions correctly, especially at the national examination. From this perspective, there appears to be a clear need for further and deeper insight into the factors that may cause high achievement in Biology **(**Ali, Toriman, Gasim, & Abidin 2o14). It is against this

background that this study therefore embarked on utilizing an edutainment approach in instruction to determine gender issues, students' interests and attitudinal factors in Biology in secondary school.

Statement of Problem

Instruction has taken another dimension; different innovative approaches have been developed to make teaching and learning pleasurable. The trend in technology has brought about new methods in instructional systems; among these various methods is edutainment. Edutainment is a modern innovation in educational technology; it is an educational process which is considered as a combination of current practical and instructive teaching approaches, which is built on the idea of acquiring knowledge through entertainment. It is an open method that gives room for direct skills acquisition, involves all categories of learners, and at the same time gives room for independent learning. With time teachers would be categorized based on their exposure to technology, based on interaction and observation, it has been confirmed that old teachers found technology and its operation to be awkward while modern teachers found it difficult to utilise the traditional method.

In the global community, the campaign is that teachers should try to utilize modern technology to be able to sustain students in schools because the level of academic activities by the younger generation is highly disappointing because the old method of teaching is still highly prevalent. The old method is less interactive and makes students sit passively in the process of instruction. Studies have shown that a lot of science teachers hardly use fun-related instructional strategies to make instruction interactive, especially since most private school teachers still use archaic, outdated and un-stimulating strategies to teach science concepts thence students' academic performance in science has nothing to write home about. It is expected that in private schools, where parents pay exorbitant fees for education, the mode of instruction should be commensurate with the amount of money paid.

- To have effective interactive lessons teachers of science subjects should explore every avenue available to bring technologically packed instruction to the classroom. It was believed that the use of technology for instruction could lead to the following: reduce tension for students learning science, make them have positive attitude and interest towards chosen science-oriented subjects as a profession, and close the gap in performance among genders giving room to gender equity. The researchers aimed to find out the extent to which instruction that is technologically packed would boost students' performance in Biology without destroying their interest and causing gender inequality. Given all these points, the study intends to utilize the Edutainment Approach in Instruction to determine gender issues, students' Interests and attitudinal factors in Biology in Secondary School.

Purpose of the Study

The purpose of the study was to examine the effect of the edutainment method of teaching on students' academic performance in Biology. The specific objectives included to:

i. Ascertain if there is a difference in the performance of male and female students taught biology using edutainment
ii. Ascertain if the edutainment method of teaching affects students' attitude and interest towards Biology.

Research Questions

The following research question was formulated to guide this study:

i. Is there any significant difference between male and female students' academic performance in Biology when the edutainment method is used

ii. Does the edutainment method of teaching have any impact on students' attitude and interest towards Biology?

Research Hypothesis

i. Ho_1: There is no significant difference between female and male students' academic performance in Biology when the edutainment method is used.

Methodology

The research design for the study was a quasi-experimental design which involved two groups i.e. the control and experimental groups. The population consisted of all students of private schools in District 1 of Alimosho Local Government area of Lagos State. A purposive sampling technique was used, by selecting a private school in Abesan Estate, Ipaja, this was so because of the convenience it provided for the researchers. An intact class of 30 SS 2 students was used as the control group and another intact class of 30 SS 2 students was used as the experimental group. The researchers obtained permission from the principals of the selected school to conduct the study with the help of research assistants. There were two groups for the research work, the control group which comprised an intact class of 30 SS2 students and the experimental group which comprised another intact class of 30 SS2 students. The biology achievement test was administered as the pretest before the lesson plans for edutainment and traditional approaches were used on the two groups. The same content of pre-test questions was administered to carry out a post-test on the control and experimental groups after teaching both groups separately to assess the academic performance of the students. The answers to the questions were collected from the subjects with the help of the research assistants and scored appropriately by the researchers. The students' opinion questionnaire was distributed to the experimental group which was used to determine the students' attitude towards Biology using edutainment. The data was then grouped into appropriate variables and subjected to data analysis.

The instruments were assessed by experts in education to ensure the content and face validity of the opinion questionnaire, edutainment and traditional method lesson plans. The biology achievement test comprised of questions extracted from past standard WAEC questions in Biology. A pilot study was done in another private school which is within the study area; there were two groups, the control and experimental groups. After the pretest, the control group was taught using the traditional method and the experimental group was taught using the edutainment method on the topic of digestion, after which the post-test was administered. A set of Opinion questionnaires was distributed to the experimental group to respond to. The test re-test method was used to establish the reliability of the instrument, which was administered twice to the control and experimental group for two weeks. A coefficient of stability of 0.96 was determined for the instrument.

Method of Data Analysis:

This is the procedure for analysing data collected, the scores of the pre-test and post-test used for the control and experimental group were computed and analysed using Statistical Package for Social Science (SPSS) at 0.05%. The result of the student's opinion questionnaire was analysed using ordinary percentage to determine the attitude and interest of students towards Biology learning through an edutainment approach.

Presentation of Results

Table 3: Mean(X) and Standard Deviation (SD) Scores of Male and Female Students' Mean Achievement scores in Biology in the Edutainment Group and Traditional Group

Group	Gender		Pre-test		Post-test		Mean Gain Score
		N	X	SD_1	X	SD_2	
Edutainment Method	Male	15	6.4	1.83	16.27	1.49	9.87
	Female	15	7.73	2.50	15.66	1.72	7.93
Traditional Method	Male	15	6.13	2.03	6.13	2.03	0
	Female	15	6.87	2.36	6.87	2.36	0

Note: N = number of students, SD_1=standard deviation for pre-test, SD_2=standard deviation for post-test, X=mean

The result in Table 3 indicated that male students taught biology using the edutainment method had a mean gain of 9.87 and their female counterparts had a mean gain of 7.93. Also, male and female students taught biology using the traditional method had no mean gain (zero), again indicating that the male and female students in the traditional group were relatively at the same cognitive level before and after the treatment, while the results reflecting on the edutainment group showed that male students performed better than their female counterpart

Hypothesis one

HO_1: There is no significant difference between female and male students' academic performance in Biology when the edutainment method was used.

Table 1: Edutainment Post-test ANOVA (Analysis of variance) summary of Male and Female Students Mean Achievement Score

Source of Variation	DF	SS	MS	F- stat	P- value
Between-group	1	2.7	2.7	1.04	0.31
Within group	28	72.27	2.58		
Total	29	74.97			

Note, DF=degree of freedom, SS= sum of squares, MS= mean square

In Table 1, since P-value is greater than 0.05, the null hypothesis is upheld. Hence, it is concluded that there is No significant difference between female and male students' academic performance in Biology when the edutainment method is used

Decision: The null hypothesis is upheld, there is no significant difference between female and male students' academic performance in Biology when the edutainment method is used**.**

Table 4: Result of the opinion questionnaire given to the students in the edutainment group.

Statement	Response	Response
1. What is the advantage of edutainment to your study?	Very good	Good
	30 (83%)	30 (17%)
2. Edutainment has helped me to remember what I learn	Very well	Well
	30 (70%)	30 (30%)
3. Interact with edutainment mode of instruction in class is	Very good	Good
	30 (60%)	30 (40%)
4. With edutainment in the classroom, I give definitions of concept in my subject	Very quickly	Quickly
	30 (47%)	30 (53%)
5.With edutainment in class, I find learning	Very interesting	Interesting
	30 (57%)	30 (43%)
To my learning, edutainment impacted positively to my willingness and desire to learn as a student	Very positive	Positive
	30 (73%)	30 (27%)

Effects of the edutainment method of teaching on students' attitudes and interest towards Biology

Ordinary percentage was conducted on the result from the opinion questionnaire to determine the impact of edutainment on students' attitudes and interest towards biology

With the use of ordinary percentages for analysis, 83% of the students in the edutainment group concluded that edutainment had a very good advantage in their study while 17% concluded that edutainment had a good advantage in their study

70% of the students in the edutainment group concluded that edutainment helped them remember what they learnt very well while 30% concluded that edutainment helped them remember well. 60% of students in the edutainment group concluded that interacting with the edutainment mode of instruction in class was very good while 40% concluded that interacting with the edutainment mode of instruction was good.

Furthermore, 47% of the students in the edutainment group concluded that with edutainment in the classroom, they defined concepts in their subject very quickly while 53% concluded that with edutainment in the classroom, they defined concepts in their subject quickly

57% of the students in the edutainment group concluded that with edutainment in class, they find learning very interesting while 43% concluded that with edutainment in class, they find learning interesting.

73% of the students in the edutainment group concluded that edutainment impacted very positively, their willingness and desire to learn as students improved greatly, while 27% concluded that edutainment impacted positively, and their willingness and desire to learn is greatly enhanced. Since on average a good percentage of the students concluded that edutainment had a very good advantage in their study, edutainment helped them to learn very well, it was stated that interacting with edutainment mode of instruction in class was very good, with edutainment they defined concept in their study quickly, with edutainment learning was very interesting and edutainment impacted very positively to their willingness and desire to learn as students, the null hypothesis is hereby rejected. Hence edutainment method of teaching has an

impact on students' attitudes and interest towards biology

Summary of the Findings

It can be deduced from the findings that there is no significant difference between female and male students' academic performance in Biology when the edutainment method is used

In addition, it can be deduced from the findings of the study that the edutainment approach has an impact on students' attitudes and interest towards Biology.

Discussion of the Findings

Findings from this study stated that there is no significant difference between female and male students' academic performance in Biology when the edutainment method is used. This shows that utilising edutainment on male and female students is highly impactful and both sexes were affected at the same rate this is supported by Sabrina and Solanki (2018) in their findings stated that in some motivation-related measures to both female and male students tend to respond to instructor gender in the same degree, this is an indication that students achievements and attention could be better irrespective of gender if exposed to any category of instructional gadgets at whatever level. And male and female students' responses to change could be enhanced at the same rate under any condition without showing any serious discrepancies in performance. To buttress the finding of this point further Pasawano, (2014) discovered that after implementing the edutainment format, the results revealed that all issues were rated at high levels. This is an indication that edutainment has brought a significant difference to the instructional process, which is why Chilingaryan and Zvereva. (2020) opined that the main difference between edutainment and the modern paradigm of learning is that the subject takes an active part in the educational process.

Another **f**inding of the study shows that the edutainment approach has an impact on students' attitudes and interest towards Biology. This finding is in agreement with Effiong and Igiri (2015) who stated in the findings of their study that a lot of students were willing to select new learning strategies as part of their exam strategy to read and pass their exams. This could be averred that this developed interest is a positive step towards students showing more interest in science subjects, this would help students to give apt definitions of concepts taught in their study quickly and look forward to learning.

It is also an indication that students' willingness and desire to learn and find learning very interesting are embedded in the edutainment mode of instruction. It was revealed that Students who discover academic interests in high schools and colleges are better prepared for satisfying careers. Interest is a powerful motivational process that motivates learning and guides academic and career trajectories (Renninger and Hidi 2016).

Consequently, with positive interest and optimum desire to acquire knowledge, learners are more relaxed, energetic, alert, responsive, less fearful and more open to learning when they enjoy the process of learning. In a nutshell, edutainment has a lot to offer the instructional process, the planned activities for learners are fun-oriented and highly friendly, so learners would want to do it again and again which should make teachers very happy.

Conclusions

- Since there was no significant difference between female and male students' academic performance in Biology with the use of edutainment, this shows that both males and females could utilize edutainment for maximum academic benefit.
- The use of edutainment does not give preference to gender and edutainment encourages active participation of students irrespective of gender.

- The use of edutainment would tilt students towards picking science subjects as courses to study.
- Edutainment is an avenue to make students look forward to learning Biology concepts which could be transferred to other science subjects.

Recommendations

The following recommendations were made based on the results of the findings

1. Male and female students should be exposed to an edutainment teaching environment.
2. Parents should assist schools to ensure that there is availability of edutainment media to their children at home and monitor their children to utilize some readily available edutainment resources in television, radio and educative edutainment software for learning.
3. Teachers should ensure that they integrate edutainment in addition to creating a mode of instruction that could enhance good learning outcomes for the learners.
4. Students should ensure that they expose themselves to the various edutainment media available some of which can be learnt on YouTube

References

Agboghoroma, T. E. &. Oyovwi, E. O. (2015). Evaluating Effect of Students' Academic Achievement on Identified Difficult Concepts in Senior Secondary School Biology in Delta State *Journal of Education and Practice www.iiste.org ISSN 2222-1735 (Paper) ISSN 2222-288X (Online) Vol.6, No.30, 2015*

Aksakala, N.(2014) Theoretical View to The Approach of The Edutainment 5th World Conference on Learning, Teaching and Educational Leadership, *WCLTA 2014, Elsevier doi: 10.1016/j.sbspro.2015.04.081. Ltd www.sciencedirect.com*

Alabi, O. (2017) Assessment of School Facilities in Lagos State Junior Secondary Schools. *A thesis submitted in the Department of Science and Technology Education, Faculty of Education, Lagos State University, Ojo,*

Alam, M.S. (2011) Gender Studies in Teacher Education: An Empirical Research. Asian Social Science DOI: 10.5539/ass.v7n12p168. https://www.researchgate.net/publication/272692116

Ali, A. R. , Toriman M.E., Gasim, M.B., Abidin S.Z. (2014) Academic Achievement in Biology with Suggested Solutions in Selected Secondary Schools in Kano State, Nigeria. International Journal of Education and Research Vol. 2., (11)

Chilingaryan, K. & Zvereva, E. (2020) Edutainment as Contribution to Future Education of Foreign Languages in Higher Schools *Corpus ID: 213406527DOI:10.18768/10.18768/ijaedu.616012*

Coleman, R (2017). Gender and Education in Guinea: Increasing Accessibility and Maintaining Girls in School. Journal of International Women's Studies, 18(4), 266-277. *Available at: http://vc.bridgew.edu/jiws/vol18/iss4/19*

Effiong, O. E. & Igiri C. E, (2015) Impact of Instructional Materials in Teaching and Learning of Biology in Senior Secondary Schools in Yakurr LG A. LearnTechLib - The Learning & Technology Library ILSHS Volume 62, Oct 29, 2015 ISSN 2300-2697

Gender equality in education Introduction The great value of gender equality in education is already recognized by policy makers. (2019, Jun 06). Retrieved April 17, 2021, from https://midwestcri.org/gender-equality-in-education-introduction-the-great-value-of-gender-equality-in-education-is-already-recognized-by-policy-makers/

Hanlon, N. (2019). *Relationships Among Caregiver Risk Factors, Access to Social Services, and Reported Child Maltreatment in a Nationally Representative Sample* (Doctoral dissertation, William James College).

Heidari, S. Babor, T. F. De Castro, P., Tort, S. & Curno, M. (2016) Sex and Gender Equity in Research: rationale for the SAGER guidelines and recommended use Research Integrity and Peer Review (2016) 1:2 DOI 10.1186/s41073-016-0007-6

Kricina, A. V. (2015) Flexibility as a Pedagogical Challenge: "Teaching-Through-Play" or Edutainment Practices for Computer Science Students. New Perspective in Science Education

Kumar, C., & Pandey, V. (2021). Access to Education and Gender Equality. In *Gender Equality* (pp. 1-10). Cham: Springer International Publishing.

Okolie, U. C., Nwosu, H. E., & Mlanga, S. (2019). Graduate employability: How the higher education institutions can meet the demand of the labour market. *Higher education, skills and work-based learning*, *9*(4), 620-636.

Pasawano, T. (2014) Results of enhanced learning with the edutainment format Elsevier: *Procedia-Social and Behavioral Sciences 176 (2015) 946 – 951 Available online at www.sciencedirect.com IETC 2014*

Sabrina M. & Solanki, D. , (2018). Looking Beyond Academic Performance: The Influence of Instructor Gender on Student Motivation in Stem Fields *https://doi.org/10.3102/0002831218759034*

Swarat, S. Ortony, A. & Revelle, W. (2012) Activity Matters: Understanding Student Interest in School Science *Journal of Research In Science Teaching Vol. 49, No. 4, Pp. 515–537 (2012)*

Vlachopoulos, D. & Makri, A., (2017). The effect of games and simulations on higher education: a systematic literature review. *International Journal of Educational Technology in Higher Education (2017) 14:22 DOI 10.1186/s41239-017-0062-1*

Wirawan, S. , Muhammad, F.& Agushinta, D. (2013) Analysis of Child Computer Interaction in Edutainment and Simulation: Games Application on Android Pl R.
2013 DOI:10.14569/IJACSA.2013.040724

Zeidan A (2010). The Relationship between grade 11 Palestinian attitudes toward Biology and their perceptions of the biology learning environment, *International Journal of Science and Mathematics Education, 8:783-800.*