

Use of YouTube as an Educational Tool to Arouse the Interest of Secondary School Students in the Subject Biology in Ikwerre Local Government Area of Rivers State

Edache-Abah, Odachi Felicia & Dr. Dike, John Worlu

Abstract: *This study was conducted to find out how the use of YouTube as an educational tool can arouse the interest of secondary school students in the subject Biology. Four research questions, four hypotheses were raised, answered and tested at 0.05 level of significance. Quasi-experimental design was employed by using pre-test post-test control group. Population was 2,221 SS2 Biology students in 13 secondary schools in study area. A sample size of 109 students from two schools using purposive sampling technique was used. The instrument "Biology Interest Scale" (BIS) was validated by experts in science education. A reliability of $r = 0.93$ of internal consistency was calculated using Cronbach's alpha. Mean and standard deviation were used to answer the research questions, while t-test was used to test the hypotheses. The findings show that YouTube improves students' interest. And that the control group also had a high level of interest even when not taught with YouTube but there was no significant difference. There was also no significant difference in the mean interest scores of both male and female students, it was then concluded that despite the urge and need to blend traditional classroom teaching/learning with some online YouTube contents to arouse students' interest, students can still have high level of interest when taught concepts in Biology using the conventional teaching method. It was recommended that educators should blend their teaching of curriculum contents, using YouTube to arouse students' interest.*

Keywords: *YouTube, Students' Interest, Concepts in Biology*

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I. Introduction

YouTube is a website that allow free video sharing and also to watch videos online. It allows one to create and upload videos online to share with others. YouTube being very popular has become one of the most used website and a large resource tool for educational content. It is very easy and self-explanatory. It is not difficult to use YouTube. A completely free resource that is huge and varied with lots of potentials for the classroom. (www.edudemic.com).

YouTube not only serves as digital entertainment but also a great environment for learning and should be used in eLearning, which can truly benefit your eLearning audience. (www.elearningindustry.com)

Many underestimate the potential of YouTube as an educational tool. But YouTube could well be the most important educational tool of our time. The site provides students, teachers and qualitative research experts with a unique stock of videos that illustrates the concepts of basic qualitative research. Jones and Cuthrell (2011), cited the possible uses of YouTube in the educational process, stating that YouTube videos can be used directly in the classroom as part of the teaching/learning process. They are usually used to introduce and explain some new concepts even while teaching by displaying information for the class to see, or at the end of the lesson to recommend some websites. YouTube videos can also be used as an educational resource, where the teacher uses the video as a model for classroom activities and discussions to arouse students' interest.

Beside using YouTube to deliver lecture content, free video sharing platforms are being adapted for a variety of educational purposes like: creating of specific subject play-lists, flipping the classroom (where individuals study at their convenient time outside classroom, then meet to discuss), reflective videos produce by students, various blended learning formats. All of these can arouse students interest by using YouTube on very flexible delivery to smart-phones and tablet computers, laptops as well as the more traditional desktop Personal Computers. (Wang & Yang, 2013).

Research shows the possibilities of videos to include positive attitudes, learning control, enhanced reading and study behavior, and the students' improved performance and interest. Researcher has also found out some downsides of integrating YouTube videos in the teaching/learning process to include reduction in number of students participating in class, others still prefer the conventional teaching methods, and inability to access the technology for instance.

Duncan, Yarwood-Ross and Haigh (2013) explain the importance of video sharing sites and argue that YouTube videos are valuable to practical, medical and clinical science education, and research. The authors report that the videos on YouTube may be used in a way that stimulates student participation, to counteract the students' lack of interest often reported in traditional learning.

Interest is seen as a need to know, it is also the feeling of wanting to give your attention to something or of wanting to involve with and to discover more about something. Interest is the quality that makes one feel attracted or physically connected to doing something (Sidhu, 2006).

Azuka (2012) noted that interest in the materials studied enhances the comprehension of the concepts and therefore, helps the students to retain the concepts for an elongated period of time. Teachers should deploy all known strategies to make lessons interesting because a student transmits a lesson into the memory and have a better performance when they see the lesson to be interesting.

Similarly, Igboanugo (2014) asserted that interest is a vital variable in the learner's learning process because with it, one will be eager to learn and acquire more knowledge. This shows that with interest, the success and satisfaction which an individual is likely to attain from engaging in certain activities now and in future can be predicted.

Odogwu (2015) defines interest as a feeling of intent, concern or curiosity about an object subject. It determines the degree and direction of students' attitude towards a subject. Learner's interest in any learning situation cannot be over-emphasized, reason has been that learners learn better when they have interest in what they are learning. Thus, it facilitates or hinders the learning of anything and it either leads to good or poor performance in a subject. It arouses learners to learn and provides a strong motivational force in learning, ie when the content is perceived to be useful.

The recurrence poor academic performance in Biology has being attributed to many factors with students' lack of interest towards the subject to be inclusive. It is only a positive interest that can guarantee better performance in any teaching task and that is the reason Sidhu (2006) asserted that students work most effectively at tasks in which they are genuinely interested in. Also, Abakpa and Igwue (2013) noted that increased students' success in any learning task is triggered by interest. Hence, it is imperative that students' interest is kept and sustained as to obtain better performance in Biology. Most Biology teachers still use the conventional teaching method that make Biology lessons to be bore and not inspiring. Thus, the teachers have the responsibility to identify and use strategies that can arouse, maintain and lead to lasting positive interest toward the subject.

Sidhu (2006) is of the opinion that students readily become interested in things which are new or exciting, for which they can perceive practical values and which involve puzzle elements or elements of mastery. Here are some of the characters exhibited by teachers that make students to have negative interest, they are:

- Most teachers create the impression to students that science is difficult and it is meant for only the gifted students.
- Most teachers are not patient with the students rather they are harsh to them.
- Most teachers are very fast when teaching and also do not make students active participants in the class.
- Others do not border to write the corrections to class work and assignment given to students.
- There is no good rapport between the students and the teachers

In the view of (Usman &Nwabueze (2011), the purposes of stimulating the interest of students include:

- To make the students to be active learners.
- To attract their attention and
- To increase their enthusiasm to learn.

Mark (2011) noted that interest is of two types: situational interest and individual interest. Situational interest is a product of the environment that requires an effective reaction and focused attention. It is dependent on favourable environmental condition and can be transient in nature. Mark (2011) is of the view that situational interest can influence learning by including stronger attention to learning materials. It plays a critical role in learning especially when the learners have no pre - existing individual interest in academic activities, content, areas or topics and when introduced in the learning process will make a significant input to the motivation of academically unmotivated learners.

Individual interest also known as personal interest is an interest formed on existing knowledge about a class of object or ideas that lead to a desire to be involved in activities related to such. Students with such interest have an inner drive to hunt for opportunities to learn more about a specific topic. It was ascertained that such interest energizes and motivates students thought and action in a very goal directed way. This means that those who are interested in certain activities will give a keen attention, persist for more period of time and learn more.

Nevertheless, though situation and individual interests may be different, they still can interact and impact each other development. For instance, while individual interest in a certain topic may assist students endure a dull presentation about a topic, situational interest sustains motivation and performance even when the students do not have personal interest in that particular topic and it actually add to the development of long lasting individual interest (Mark, 2011),

When a teacher stimulates students' interest in his/her study, the students' will have a stronger motivation to study, even where the material being taught is very abstract and elusive.

Biology is one of the science subjects that senior secondary school students offer at the senior levels in the Nigerian secondary schools. Biology is very important in science and it is a requirement for further learning of a lots of science-related professional courses like medicine, agriculture, pharmacy, etc. In this present Nigeria, greater emphasis is laid on science and technological development, therefore students are being encouraged to take up science-related subjects, and most students prefer the subject Biology. Presently, Biology embedded in almost all the field of human endeavor, and is regarded to play a fundamental role in educational advancement. This is for sure is obvious in all the technological advancement in the whole wide world today. This is possible because of scientific investigations, however, sad as it may sound, there is high rate of failure in the subject in most secondary schools in Nigeria, (www.societyofbiology.org)

Olele (2014) highlights the use of web-based facilities in various formats: images, audio, visual, and audio-visual as means of facilitating the internationalization of teacher education. This is fascinating as the internet brings the whole world into the classroom. YouTube as a visual aid, can arouse the interest of students/learners and help the teachers in easy concepts delivery. There are some great videos out there on YouTube that are very interesting and entertaining and will never be seen anywhere else. (Hicks, 2015).

Statement of the problem

In this present Nigeria, greater emphasis is laid on science and technological development, therefore students are being encouraged to take up science-related subjects, and most students prefer the subject Biology. The recurrence poor academic performance in Biology has being attributed to many factors with students' lack of interest toward the subject to be inclusive. YouTube as a visual aid, can arouse the interest of students/learners and help the teachers in easy concepts delivery. This study therefore is purposed to find out how the use of YouTube as Educational tools can arouse the interest of students in the teaching/learning of Biology concepts.

Aim and Objectives

The aim of this study is to find out how the use of YouTube as an educational tool can arouse the interest of secondary school students in the subject biology in Ikwerre local government area of Rivers State. Specifically, the objectives are to:

1. Find out the level of students' interest when taught concepts in Biology using YouTube.
2. Find out the level of students' interest when taught concepts in Biology using conventional teaching methods.
3. To compare the mean scores of students taught concepts in Biology using YouTube and those taught using conventional teaching methods.
4. To compare the mean scores of both male and female students when taught concepts in biology using YouTube.

Research questions

1. What is the level of students' interest when taught concepts in Biology using YouTube?
2. What is the level of students' interest when taught concepts in Biology using conventional teaching methods?
3. What is the difference in the mean scores of students taught concepts in Biology using YouTube and those taught using conventional teaching methods?
4. What is the difference in the mean scores of both male and female students when taught concepts in biology using YouTube?

Hypotheses

1. There is no significant difference in the mean scores of students taught concepts in Biology using YouTube and those taught using conventional teaching methods.
2. There is no significant difference in the mean scores of both male and female students when taught concepts in biology using YouTube?

II. Methodology

Quasi-experimental design of the pre-test, post-test experimental and control group was used for the study. The population for the study is two thousand, two hundred and twenty-one (2,221) students, which comprised all the Senior Secondary two (SS2) class offering Biology as a subject in all the thirteen secondary schools in Ikwerre Local Government Area, Rivers State, Nigeria. Using purposive sampling techniques, two secondary schools were selected from the population of the study, the sample size of one hundred and nine (109) students in their intact classes were used for the study. The research instrument was developed by the researcher for this study as Biology Interest Scale (BIS) and a face and content validity was done by two Lecturers of Science Education in the Department of curriculum studies and educational technology, an internal consistency coefficient of the BIS reliability “ $r = 0,93$ ” of was calculated using Cronbach Alpha. Mean and standard deviation were used to answer the research questions while t-test was used to test the hypotheses.

III. Results

Research question one: What is the level of students’ interest when taught concepts in Biology using YouTube?

Table 1. Mean and Standard deviation of the level of students’ interest when taught concepts in Biology using YouTube

Experimental Group	n	Min.	Max.	Mean Rating	Std Error	Std. Deviation
Pre-test	56	46	73	55.96	0.701	5.247
Post-test	56	52	73	59.20	0.602	4.506

The table 1 shows that the pre-test mean rating of the experimental group is 55.96 and Standard deviation of 5.247 while the post-test mean rating of 59.20 and standard deviation of 4.51 respectively. The result of the post-test shows that the interest of the students was aroused after teaching them concepts in Biology using YouTube, with the mean increase of 3.23. the post-test mean values also shows that all the students showed a high level of interest in biology having the minimum value of 52, also the smaller standard deviation for the post-test indicate that the rating were closely distributed among the class.

Research Question Two: What is the level of students’ interest when taught concepts in Biology using conventional teaching methods only?

Table 2. Mean and Standard deviation of the level of students’ interest when taught concepts in biology using the conventional teaching methods only

Control Group	n	Min.	Max.	Mean Rating	Std Error	Std. Deviation
Pre-test	53	44	69	55.70	0.756	5.500
Post-test	53	47	70	57.79	0.662	4.817

The table 2 shows that the pre-test mean rating of the control group is 55.70 with a Standard Deviation of 5.50 while the post-test mean rating was 57.79 and standard deviation of 4.81 respectively. The result of the post-test shows that the interest of the students was aroused after teaching them concepts in Biology using the conventional teaching method, with the mean rating increase of 2.09. The smaller standard deviation for the post-test indicate that the values were closely distributed among the class.

Research Question 3: What is the difference in the mean scores of students taught concepts in Biology using YouTube and those taught using conventional teaching methods?

Table 3: comparing the mean rating of both experimental and control group

Groups	n	Min.	Max.	Mean Rating	Std Error	Std. Deviation
Experimental	56	52	73	59.20	0.602	4.506
Control	53	47	70	57.79	0.662	4.817

Table 3 that the post-test mean value for the experimental group is 59.20, while that of the control group is 57.79 respectively. The mean difference of 3.23 was recorded for the experimental group and 2.09 for the control group. This shows that the experimental group showed a higher level of interest than the control group with a mean gain of 3.23.

Research Question 4: What is the difference in the mean rating of both male and female students when taught concepts in biology using YouTube?

Table 4: comparing the mean ratings of male and female students

Experimental Group	Tests	n	Mean	Std. Deviation	Std. Err Mean
Male	Pre - test	22	55.59	5.526	1.178

Female		34	56.21	5.127	0.879
Male	Post - test	22	58.95	4.776	1.018
Female		34	59.35	4.389	0.753

Table 4 shows that the mean ratings of both the pre-test and the post-test of the female students is higher than the mean scores of the male students. This implies that the female students showed higher level of interest in the subject Biology than the male students.

Hypothesis One: There is no significant difference in the mean ratings of students’ interest between those taught concepts in Biology using YouTube and those taught using conventional teaching methods?

Table 5: showing the independent t-test of mean difference in the level of students’ interest between the experimental group and control group post-test ratings.

Groups	N	Sig.	T	Df	Sig. (2-tailed)	Mean Diff.	Std. Err. Diff	Decisions
Experimental /Control	109	0.75	1.62	107	0.10	1.404	0.867	Accepted

Table 5 shows that the calculated t-value of 1.62 is less than the critical value of $t = 1.980$ at 0.05 level of significance. Therefore, the null hypothesis under investigation is Accepted. That is, no significant difference in the level of students’ interest between the Experimental and control group. Also the p-value of 0.750 recorded by the analysis is greater than the stated 0.05 level of significance.

Hypothesis two: There is no significant difference in the mean ratings of both male and female students when taught concepts in Biology using YouTube.

Table 6: showing the independent t-test analysis of the difference in the level of students’ interest in Biology between the male and female students.

Use of YouTube	n	Sig.	T	Df	Sig. (2-tailed)	Mean Diff.	Std. Err. Diff	Decisions
Male / female level of interest	109	0.75	1.62	107	0.10	1.404	0.867	Accepted

Table 6 shows that the calculated t-value of 0.320 is less than the critical t-value of 2.00 at 0.5 level of significance. Therefore, the null hypothesis under investigation is accepted that the difference between the male and female students’ level of interest in Biology is not significant having a mean difference.

IV. Discussion of Findings

The findings of this study revealed that students interest in the teaching/learning of Biology concepts can be aroused with the use of instructional technology such as YouTube. This agreed with Lawal (2006) opinion about how to teach the subject Biology, as a science subject is practical based. Therefore, to implement the new curriculum effectively, it requires that both teachers and students should extensively carry out many activities using modern, current, and appropriate educational technology. Which are in the interest of students. Particularly, concepts perceived as difficult to be expressed in words, can be better explained using the YouTube. The same view was expressed by Sidhu (2006) who in his own opinion, that students readily become interested in things which are new or exciting, for which they can perceive practical values and which involve puzzle elements or elements of mastery.

The study also revealed that students’ interest in the teaching/learning of concepts in biology can also be aroused if students are taught in a well and conducive environment, also when the teacher carefully select the right educational contents and a good teaching approach. According to Singh and Comenius (2005), the foundation of all learning consists in representing clearly to the senses and sensible objects so they can be appreciated easily” He is also of the opinion that meaningful learning experience is achievable if students are allowed to practice by themselves in an environment suitable for them to develop their own phenomenal knowledge and relate it to scientific concepts.

A press released by PRLog (2012) on face to face classroom environment, it was reported that a researcher shared his experience after taking and teaching courses in both online and traditional classes, discovered that students consistently get much more valuable education by learning in a traditional classroom environment. This also agrees with the research carried out by Sitzmann, Kraiger, and Wisher (2016), that students interact with their teacher and classmates, to create an opportunity, practice good dynamics, cooperate in their activities. The traditional classroom environment can be made to be very exciting and interesting too by a good teacher, since questions get feedback and clarification immediately.

The findings further revealed that Despite its fame, online instruction has yielded inconsistent results when trying to produce positive student outcomes. Partially born out of this result is the increasing popularity of the hybrid/blended classroom format, a teaching style that combines both conventional teaching method and online tools to offer students a multitude of learning options.

While research on other Internet platforms suggests that social and entertainment interest have the potential to result in compulsive use, there is no particular reason to propose that interest to use YouTube as an Educational tool would have a similar effect, and consistent with this Yang and Tung (2007) found that, internet addicted high school students had higher levels of interest.

The study also revealed the urge and need to blend conventional classroom teaching and learning with some online YouTube contents, students can still perform better when taught concepts in Biology using the conventional teaching method. (Young, 2009).” Abrantes (2007) in his research on “Pedagogical Effect, Students Interest, and Learning Performance” advised teachers to use instructional methods that get students involved and teachers to be efficient in delivering their subjects because such increases students’ interest.

The findings also show that both male and female students have a high level of interest in the subject biology. Similarly, Igboanugo (2014) asserted that interest is a vital variable in the learner’s learning process because with it, one is eager to learn and acquire more knowledge. This shows that with interest, the success and satisfaction which an individual is likely to attain from engaging in certain activities now and in future can be predicted.

V. Conclusion

The findings have revealed the fact that the use of Educational Technology such as YouTube arouses the level of students’ interest when taught concepts in Biology. Despitethe urge to augment teaching/learning of concepts in Biology with some educational technology such as YouTube to arouse students’ interest, learning of concepts can also be very interesting when teachers use the conventional instructional methods that get students involved and teachers to be efficient in delivering their subjects. Gender differences perhaps did not influence students’ interest in biology, since the study also revealed the fact that the difference in the level of students’ interest among male and female students is not significant.

VI. Recommendations

Based on the findings of the study, it was recommended that:

1. School authorities should identify what teaching strategies that arouse students’ interest in teaching/learning of science subject especially Biology since it is a prerequisite in studying many of the science courses at the tertiary level.
2. School administrators to also make adequate provision of these technology to make teaching/learning easier.
3. Teachers and students should be adequately trained in the use of educational technology for effective teaching and better understanding of concepts.

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