

PERCEPTION OF YOUTUBE AS A LEARNING TOOL AMONG PRE-SERVICE SCIENCE TEACHERS IN MINNA NIGER STATE

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Abstract

This study investigated the perception of YouTube as a learning tool among pre-service teachers in Minna, Niger state. Building on the Technology Acceptance Model (TAM) this study investigated student's perceived usefulness and ease of use of YouTube as a learning tool. The study adopted a cross-sectional survey design, the research population was 473 students from the Department of Science Education, Federal University of Technology Minna, Niger state, and 150 students which represent 30 percent of the research population, were randomly selected from the research population to serve as the research sample. A five-point rating scale Questionnaire was used as the instrument to collect data. The reliability coefficient was 0.84. The data collected was analyzed using mean and standard deviation. From the results of the study, students displayed a high level of perceived usefulness and perceived ease of use of YouTube as a learning tool. No significant difference was observed when the responses of male and female respondents were compared. Based on the results of the study it was recommended that school administrators need to concentrate more on providing internet accessibility to students who would want to use YouTube for learning and tutorials, and lecturers should make available more educational content on YouTube since many students consider YouTube as a viable option for independent learning.

Keywords: Perception, YouTube, Pre-service Science Teachers.

Introduction

Generally, learning occurs inside the classroom, under the teachers' guidance and instruction. Nevertheless, learning is not only limited to just classroom experiences. It also happens outside the classroom where learners get to learn independently of a teacher. This independent learning outside the classroom offers a wide range of possible materials for learners to utilize. These resources include print materials (magazines, novels, newspapers among others), watching videos (visual materials), or listening to music (audio media). This has led to the incorporation of Information Communication Technology into the field of education.

The incorporation of technologies into the field of teaching and learning has recently become an area of great interest (Andrina & Nikola, 2019). Different types of technologies have been adopted in educational settings to support the process of teaching and learning. The development of video technology and the Internet, as well as the development of multimedia reproduction devices, using video as a web-based multimedia device has become more popular. Currently, several educational institutions produce online educational materials including videos. Students can have rapid access to these materials anywhere and anytime (Nagy, 2018). The development of the internet also brought about the development of social media channels (examples include *WeChat, Tumblr, WhatsApp, Snapchat, Facebook, YouTube, and Twitter*) which have also been adopted as means of transferring knowledge in the 21st century. These technological advancements have made various resources available for learners to learn different concepts within the classroom under the supervision of a teacher and independently outside the classroom (Mezhuyev, 2018).

Davis (1989), in his Technology Acceptance Model (TAM), asserted that when users are exposed to a new technology, their decision on how and when to use it is influenced by several factors, notable among them are: Perceived usefulness (PU): Fred Davis described this as the extent to which an individual believes that using particular technology would enhance his/her performance. It means whether or not an individual perceives that a particular technology will be beneficial for what they want to do.

Perceived ease-of-use (PEOU): Fred Davis described this as “the extent to which an individual believes that using a particular technology would be free from effort” (Davis 1989). It is most likely that a technology that has a simple interface will gain acceptance while complicated ones may not receive such acceptance. Mullen and Wedwick (2008), stated that YouTube founded in 2005, is the largest video-sharing social media platform which is considered to be relatively a new phenomenon, and teachers together with researchers have started to pay close attention to its possibilities within the educational setting. Mullen and Wedwick (2008), also suggested that videos have the potential to enhance almost any classroom lesson and that is are available on YouTube and other video-sharing websites such as TeacherTube, United Stream, worldTV, Yahoo Video, Google Video, and MSN soap box. YouTube provides free access to an appreciable amount of educational videos (Buzetto-More, 2014) therefore making it a viable option for students to receive useful materials for learning purposes. According to Buzetto-More (2014) YouTube EDU is a service for educators that contains short lesson from teachers, entire university courses, professional development materials and motivational videos from international leaders.

Berk (2010) in his research on the use of videos and the brain, stated that, the use of video in educational setting affected the students both hemispheres of the brain and emotional senses. He referred the use of videos educationally as “picture superiority effect” which explains that when concepts or ideas are presented in form of pictures, they are more likely to be remembered than in the form of words. The use of YouTube in an educational manner is beneficial for illustrating a concept, presenting an alternative viewpoint, stimulating a learning activity, and motivating the students.

Statement of the Problem

Teachers have a responsibility to teach learners according to the syllabus provided by the institution. Some aspects of the courses/subjects are however not covered by this syllabus. These aspects that are not covered by the syllabus could be very important for students in improving their understanding and mastery of such courses or subjects.

Learners require more experience and time to learn in a classroom. However, very limited time is usually allocated for each course/subject. This presents a great challenge for students to learn and practice concepts in the classroom. Limited time and practice in the classroom may result in a lack of confidence in using or applying such concepts or ideas by the students due to fear of making mistakes. This limitation to learning and practicing adequately in the classroom has made the need for the platforms to complement traditional classroom learning very paramount with YouTube being a viable option.

YouTube is fast becoming an outstanding platform for students to self-teach and enhance their learning skill for formal assessment in the classroom. However, there seem to be scarcity of literature on the subject of the effectiveness of YouTube as a learning tool, especially the influence that tutorial videos have on student learning. This study therefore aims to investigate the perceived effectiveness of YouTube among undergraduates in the Department of Science Education, Federal University of Technology Minna.

Research Questions

The following questions were proposed to guide the study.

1. What is the perceived usefulness of YouTube as learning tool among male science pre-service teachers?
2. What is the perceived ease of use of YouTube as a learning tool among science pre-service teachers?
3. What is the perceived usefulness of YouTube as a learning tool among science pre-service teachers based on gender?

Null Hypothesis

The following null hypotheses were formulated and tested at 0.05 level of significance.

HO₁: There is no significant difference between male and female pre-service teachers' perceived usefulness of YouTube as a learning tool.

Literature Review

The latest innovations in recent technology have produced a variety of electronic devices and e-platforms that are accessible to teachers and learners at all levels of education (Jackman, 2019). The adoption and utilization of YouTube in academia has received enormous interest principally in the medical academic field as pointed out by different publications (Clifton & Mann, 2011; Green, *et al.*, 2018; Schaperet *et al.*, 2014). Su and Kuo (2010) argued that YouTube is frequently used by university students and posting information literacy videos on YouTube increases visibility but does not easily achieve a comparable accomplishment of an extensive and well-structured tutorial. Numerous librarians not only build information literacy tutorials on their library websites but also post instructional short films on video-sharing sites for easy access and high visibility (Su & Kuo, 2010).

The use of YouTube in the teaching and learning process offers both students and teachers many benefits (Alkhudaydi, 2018). These benefits include: drawing learners' attention, focusing learners' attention, examining hard-to-examine experiences, creating interest in the subject, improving content attitudes, establishing a link with learners, encouraging resourcefulness, increasing teamwork, inspiring students, making learning pleasurable, reducing nervousness about intimidating topics, increasing general understanding of concepts.

It has been found through studies that YouTube is the best fit for students raised since the introduction of the World Wide Web (Net generation) and a viable means of tapping their multiple intelligences and learning styles (Lui, 2020) which has been widely accepted (Buzzetto-More, 2014; Donoker, 2011; Kelly *et al.*, 2010). The utilization of e-learning programs and blended learning has been discovered to improve discussion, collaboration, and engagement (Buzzetto-More, 2014; Greenberg & Zanetis, 2012; Revoir, 2012). Additionally, YouTube Videos can be incorporated into most learning systems and integrated into courses, assignments, quizzes, and tutorials (Snelson, 2010), in addition, they can be used to support autonomous learning and tutoring (Berk, 2010 and Kelly *et al.*, 2010). Whereas some researchers have found YouTube to be principally effective in facilitating full online courses (Jones & Graham, 2012), others have argued that the utilization of online video-sharing services like YouTube is primarily valuable when used to accompany rather than completely substitute hybrid or blended model of learning (Kelly *et al.*, 2010).

The term Technology Acceptance Model (TAM) was first introduced by Fred Davis in 1986. It explains the relationship between perceived ease of use and perceived usefulness and their connection with the external variables and the actual use of a particular technology. The Technology Acceptance Model (TAM) is the most prominent framework for measuring user acceptance of a system (Zhou *et al.*, 2019). Al-Gahtani, (2016) defined Technology acceptance as the learner's willingness to use technology for "the tasks it is designed to support". Additionally, the Technology Acceptance Model (TAM) is particularly adapted for examining user acceptance of a technology. In the Technology Acceptance Model, a user's behavioral intention to use a particular technology shows the user's acceptance of the technology (Lee & Lehto 2013).

The Technology Acceptance Model was built on two factors (perceived usefulness and perceived ease of use) which were used to determine whether or not an individual will adopt a particular technology (Chen *et al.*, 2012). Perceived usefulness measures the degree to which an individual believes that using a particular technology would enhance his or her job or life performance while perceived ease of use the measure of the extent to which an individual believes that using a particular technology would be free of effort (Chen *et al.*, 2012).

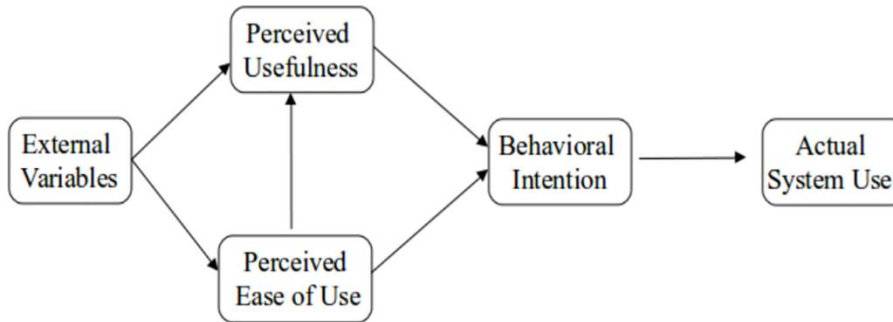


Figure 2.2: Technology Acceptance Model (Davis *et al.*, 1989)

Chen *et al.*, (2011) stated in their study that “perceived ease of use and perceived usefulness positively affect the attitudes toward an information system; and further, positively affect the individuals’ intentions to use and the acceptance of the device or technology. In addition, perceived ease of use positively affects the perceived usefulness, and both of perceived ease of use and perceived usefulness are influenced by external variable.”

Research Methodology

The study adopted a survey research design. The population of this study consists of the pre-service teachers in public Universities in Niger State while the target population was composed of 473 pre-service teachers in Department of Science Education Federal University of Technology Minna, Niger State.

A simple random sampling technique was used to randomly select a sample composed of 150 students (100-500 level) from the Department of Science Education, Federal University of Technology Minna, Niger State for the purpose of this study.

The researcher adopted questionnaire as instrument for collecting data. The questionnaire has three sections: A, B and C. Section “A” is on Demographic information of the respondents which includes sex, age, department and level. Section “B” is on the perceived usefulness of YouTube as a learning tool. It has a total of 15 items. Section “C” contains questions on the perceived ease of use of YouTube as a learning tool. It has 13 items; The research instrument was prepared using a 4 – point scale, ranging from “strongly agree” (SA), through “agree” (A), “disagree” (D) to “strongly disagree” (SD) which was scaled 4, 3 2 and 1 respectively.

The questionnaire was validated by experts in Educational Technology and Science Education department who evaluated the instrument to ascertain its appropriateness and also make recommendations. After the recommendations and corrections from the experts were effected the instrument was used for the purpose of data collection

The reliability coefficient of the instrument was obtained using Cronbach’s Alpha, the most popular coefficient of reliability measure. Based on the result obtained on analysis using SPSS the value of Cronbach’s alpha was 0.84 which is higher than the 0.70 minimum value (Nunnally1978). The data collected were analyzed using descriptive statistics (Mean and deviation). The mean and standard deviation was used in answering the posed research questions and the decision mean of 2.5 was used to determine student’s perception.

Results

Research Question one

What is the perceived usefulness of YouTube as learning tool among science pre-service teachers? To answer this research question, mean and standard deviation were used and the results is presented in Table 1

Table 1: perceived usefulness of YouTube among Pre-service teachers

Items	N	Mean	S.D	Remark
Using YouTube in my own learning time gives me greater control over my studies.	146	3.08	.74	Positive
Using YouTube in my own learning time improves my learning productivity.	146	3.28	.81	Positive
Using YouTube in my own learning time enhances the effectiveness of my study activities.	146	3.25	.79	Positive
Using YouTube videos makes it easier to study/learn at my own pace.	146	3.30	.73	Positive
Using YouTube videos in my own learning time improves the quality of assignments I do.	146	3.31	.69	Positive
Using YouTube videos in my own learning time enables me to accomplish study task more quickly.	146	3.20	.74	Positive
Using YouTube videos is another way for me to learn science	146	3.34	.71	Positive
YouTube exposes me with variety of videos for academic purposes.	146	3.40	.66	Positive
I learn new concepts from YouTube videos.	146	3.43	.65	Positive
I learn correct solutions to scientific problems from YouTube videos.	146	3.12	.67	Positive
Watching YouTube videos help in improving my listening skill.	146	3.27	.75	Positive
Watching YouTube videos help in improving my speaking skills.	146	3.01	.84	Positive
Watching YouTube videos help in improving my reading skill.	146	2.86	.88	Positive
Watching YouTube videos help in improving my writing skills.	146	2.56	.90	Positive
YouTube helps me share my science knowledge with others.	146	3.19	.76	Positive
Grand Mean		3.17	0.75	Positive

Table 1; all of the variables are classified as positive, since their mean values are greater than “2.44”. This indicates that the Pre-service Teachers consider YouTube to useful academically and is utilized by the same for their academic work. They utilize YouTube for independent studies and as compliment for traditional classroom learning. They access videos that help them accomplish learning tasks faster and easier. The

grand mean from Table 4.2 is 3.17 which is greater than 2.5 criterion mean indicating that students perceive YouTube to be useful.

Research Question two

What is the perceived ease of use of YouTube as a learning tool among science pre-service teachers? To answer this research question, mean and standard deviation were used and the results is presented in Table 2

Table 2: Perceived Ease of Use of YouTube among Pre-service Teachers

Items	N	Mean	SD	Remarks
Using YouTube to learn science independently is easy	146	3.05	.60	Positive
Becoming skillful at using YouTube to learn science is easy	146	3.04	.77	Positive
Getting information using YouTube videos is easy	146	3.35	.57	Positive
I have easy access to the YouTube website	146	3.29	.70	Positive
It is easy for me to find materials in science learning on YouTube	146	3.29	.63	Positive
I am able to watch videos on YouTube as many times as I want	146	3.42	.67	Positive
YouTube provides an attractive learning environment	146	3.03	.83	Positive
I like using YouTube in learning science	146	3.07	.74	Positive
I am confident in using YouTube to learn science	146	3.04	.78	Positive
I enjoy choosing materials on YouTube in learning science	146	3.02	.78	Positive
Using YouTube videos independently enhances my confidence to learn science	146	3.16	.73	Positive
Using YouTube videos independently enhances my confidence to practice science	146	3.16	.70	Positive
Using YouTube enables me to control my own learning	146	3.20	.71	Positive
Grand Mean		3.16	0.71	Positive

From Table 2; all the variables have been classified to be positive because their mean is above “2.5”. This indicates that Pre-service teachers perceive YouTube to be easy to use. They find variety of academic videos on YouTube which aid their learning and accessing such videos is quite easy. And accessing such videos is quite easy since the YouTube website can be accessed anywhere, at anytime and by anyone. The grand mean from Table 2 is 3.16 which is greater than 2.5 criterion mean indicating that students perceive YouTube to be easy to use.

Null Hypothesis One

There is no significant difference in the perceived usefulness of YouTube as a learning tool between male and female science pre-service teachers. To test this formulated hypothesis, an independent t-test was employed and the results is presented in Table 3

Table 3: t-test result of Perceived usefulness of YouTube among Pre-service Teachers based on Gender.

Gender	N	X	SD	t	df	P-value	Remark
Male	76	61.65	8.00				
				-2.059	143	0.29	Not significant
Female	70	64.19	9.54				

From Table 3 the Mean of both male and female Pre-service teachers when compared using the independent t-test, the result shows no significant difference between the male and female students because the P-value was found to be greater than 0.05 level of significance. According to Tinner (2017), whenever P- the value is greater than the 0.05 significance level the null hypothesis is not rejected. This indicates that there is no significant difference in the perceived usefulness of YouTube as a learning tool between male and female Pre-service teachers.

Discussion of Results

Based on the results on the analysis above, the respondents showed high level of perceived usefulness of YouTube as a learning tool. This implies that the respondents consider YouTube to be useful for academic purposes as many of them have utilize it as a compliment for traditional classroom learning also as a tool for independent learning.

However, the respondents showed a relatively higher level of perceived usefulness of YouTube than that of Ease of Use of YouTube when both are compared. This means that even though the respondents consider YouTube to be useful for academic purpose, some of them also have slight challenges when it comes to ease of accessing and navigating YouTube for academic purpose.

Additionally, when the responses of the respondents were analyzed and compared based on gender, it was found that there was no significant difference in the level of perceived Usefulness and Perceived Ease of Use of male and female respondents. This indicates that both male and female pre-service teachers consider YouTube to be both useful and easy to use for academic purposes.

Finally, in terms of perceived Usefulness and Perceived Ease of Use, majority of the respondents from the population provided positive responses which suggested that they had high level of belief that using YouTube videos was useful and easy and did not require much effort or expertise. This suggests that, they did not encounter many problems in using YouTube as one of the medium of independent learning. The feedbacks from the respondents implied that the majority of the students in the Department of Science Education, Federal University of Technology Minna, Niger state belief that YouTube videos are useful medium to enhance their learning and this they can do with ease.

The findings in this study agree with the results of a study carried out at University of Kebangsaan, Malaysia in 2014 by Nabila Shamsuddin. Where she found that majority of the students in University of Kebangsaan displayed high levels of Perceived Usefulness and Perceived Ease of Use of YouTube as a learning tool. Additionally, it was also discovered in the same study that majority of the students from each faculty used YouTube as one of the medium learning.

Recommendations

Based on the findings of the study the following recommendations were made: school administrators such as vice chancellors and principals need to concentrate more on providing internet accessibility to students who would want to use YouTube for learning and tutorials. Additionally, lecturers and educators at all levels of education must begin to make available more educational contents on YouTube since many students consider YouTube for viable option independent learning and as a perfect complement of traditional classroom learning.

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