

STUDENTS' PERCEPTIONS OF YOUTUBE AS A LEARNING PLATFORM FOR SCIENCE EDUCATION IN SECONDARY SCHOOL

A. Leela Glory

Dr. M. Balasubramaniam

Abstract

In this era of the technology boom, students today probably turn to learning educational content online. YouTube is a learning platform that is used quite often by students. To analyze the students' perception of the YouTube learning platform was the purpose of this study. This cross-sectional study contains a questionnaire tool to evaluate the perception of secondary school students towards the YouTube platform for learning science and its usage. Responses were collected by visiting the school in person and distributing the questionnaire to the sample set of students, who were asked to fill it out. These 62 samples were considered a representation of the overall population. The present study's mean score indicates that more students have a High Perception of YouTube as a Science education learning platform, and Males have a higher perception of YouTube as a Science learning platform than Females.

Keywords: YouTube, Perception, Science learning, Secondary School Students

INTRODUCTION

YouTube is a platform where videos can be shared and accessed by visiting the website. YouTube, as per visits by individuals, is rated the second highest in the world, after Google Search [1]. YouTube was established by previous employees of PayPal, Steve Chen, Jawed Karim, and Chad Hurley, in 2005 [4]. YouTube, being one of the most widely viewed media platforms, is also accessed worldwide by students to gain insights and view Science-related content [3]. YouTube is a very user-friendly learning platform that has content in the form of simulated videos and animations that make learning enjoyable and interesting for students. To use YouTube, all we need is a mobile phone, a desktop device, or a laptop with

internet access and a web browser. YouTube created an American children's video app named YouTube Kids, which also has science content suitable for children [5]. YouTube makes learning interesting as it has science content in the form of videos that keep students focused, thus making the concept understandable and creating an alternative to rote learning.

REVIEW OF RELATED LITERATURE

Olić Ninković [2] studied the opinion of students towards using Socrative in Chemistry education, which is an Online Platform. This study aims to evaluate the students' opinions on the Socrative Online platform when applied during formative evaluation as an SRS. The sample used for this study was from the Republic of Serbia

and contained seventy-seven students from the Primary and Secondary schools. The knowledge of Primary school students regarding Mixtures and Secondary school students regarding Mixtures and Secondary school students regarding Antibiotics was assessed by conducting an online Socrative quiz. A questionnaire was given to the students to fill out after the quiz was conducted to judge their opinion about the Socrative platform. In the questionnaire, 26 items related to the five subscales: Belief, Advantage, Engagement, Satisfaction, and Usability were included. As per the study, students had a positive perception about Socrative in Chemistry education, which is what the analyzed results interpreted. Using this platform had a positive impact on students, increasing their engagement and motivation during class, thus making them give positive feedback. It is concluded from the results that the online Socrative platform was enjoyed by the students, and this platform can be recommended to perform successful evaluation using appropriate methodologies during the Chemistry classes in the future.

STATEMENT OF THE PROBLEM

Online Platforms have become an increasingly integral part of education in this era of the technology boom. Especially, in science content, which includes representations in the form of Visualizations, Demonstrations, and Conceptual explanations, Online platforms are of great assistance. Of all the various online tools, YouTube has emerged to be

the one used widely both formally and informally. YouTube offers a wide range of science-related content, ranging from Practical demonstrations, Lectures by experts, Explanations by peers, and Animated content, which makes learning more engaging and interesting. In spite of being popular, there seems to be limited empirical understanding of how students perceive the YouTube learning platform for learning Science. There is a persistence of various questions regarding Credibility, Student engagement, Educational importance, and effectiveness of the content of YouTube education from the perspective of Secondary School Students. Reason that motivates students to use YouTube or not use YouTube to learn Science? Does YouTube clarify doubts related to complex Scientific concepts? Is YouTube Science content aligned with the latest curriculum? Do students perceive YouTube to have any limitations or misinformation? It is very important and critical for Content Creators, Curriculum Designers, and Educators to understand Students' perception about the YouTube learning tool to integrate it into Science Education and bring about a meaningful learning Experience. Such insights are much needed to make the YouTube learning tool be used to its fullest potential and not remain underutilized concerning students' learning needs.

Thus, this study aims to analyse and evaluate the perception of Students about YouTube as a learning platform for Science Education, focusing on the perceived usefulness, understanding ease,

and connection to the school curriculum, and its influence on Academic performance and Motivation.

NEED AND SIGNIFICANCE OF THE STUDY

Science is a subject that sparks curiosity in students and encompasses many complicated concepts. Students of today have exposure to a wide range of online learning apps, which help them to gain access to a huge online science content. YouTube is the second-largest viewed online learning platform after Google [1]. The YouTube learning platform has uploaded videos related to various science concepts by simplifying complex content, which are interesting to watch. These videos keep the students focused and help them understand complex concepts better. As YouTube is a user-friendly learning platform that can be accessed anytime and anywhere, Students opt to use it to learn science. So, the researcher has taken this study entitled Students' Perception of YouTube Learning Platform. The goal of this study is to analyze what students think about the YouTube learning platform for learning Science and how often they use this platform. The question of whether boys or girls use this platform more was evaluated.

OBJECTIVES

1. To analyze the Perception level that students of secondary school have towards the YouTube learning platform for science learning.

2. To examine the significant difference in Perception of the YouTube learning platform for learning Science according to Gender and Usage.
3. To examine the significant difference in the Usage of the YouTube learning platform for learning Science according to Gender, Access to devices, and Internet availability.

HYPOTHESES

1. There is no significant mean difference in the Perception of Male and Female students towards the YouTube learning platform for learning Science among Secondary School students.
2. There is no significant mean difference in the Usage of the YouTube platform for learning Science by Male and Female Secondary School students.
3. There is no significant mean difference in the Perception concerning the Usage of the YouTube learning platform for learning Science among students in Secondary School.
4. There is no significant mean difference in the Usage concerning the Device being used to access the YouTube learning platform for learning Science among students in Secondary School.
5. There is no significant mean difference in Usage concerning the Internet availability to access the YouTube learning platform for learning Science among Secondary School students.

METHODOLOGY

Method: This study utilized the Survey method.

Population: Secondary students of CBSE school in Coimbatore, Tamil Nadu.

Sample Size: Data was collected from 62 students for this study.

Tool: The questionnaire tool was developed by the investigator. It contains questions related to Demographic details, Perception, Device used to access YouTube, Internet availability, and Usage of the YouTube learning platform. The tool consists of 30 items covering seven dimensions: Effectiveness, Engagement & Interest, Learning outcomes, Accessibility, Content quality, Motivation & Exploration, and Comparison, which were included in the questionnaire.

Data Collection Method: A questionnaire tool to assess the perception and usage of the YouTube platform for learning science by students in secondary school was included in this cross-sectional study. Responses were collected by visiting the school in person and distributing the questionnaire to the sample set of students, who were asked to complete it.

Statistical Analysis: Using Statistical Package for Social Sciences (SPSS), the analysis was performed statistically after entering and coding the responses in Microsoft Excel. Calculations related to Descriptive analysis, such as Percentages, Mean, and Standard were done. The differences between the selected dependent variable (Perception) and the independent

variables (demographic characteristics of the participants) and technical access were analyzed using the t-test, Mann-Whitney U and Chi-square, which were also used to analyse the non-parametric ordinal data. A p-value less than 0.05 was considered statistically significant for all analyses.

ANALYSIS OF DATA

PERCEPTION LEVEL

Perceptions of the YouTube learning platform for science education among the students of Secondary school.

Table 1 Perception Level

Score Range	No. of Students	%	Level of Perception
30 - 59	0	0	Low Perception
60 - 89	2	3.2	Moderate Perception
90 - 150	60	96.8	High Perception

From the table, it clearly shows that 96.8 percent of students in Secondary school have a High level of Perception. Thus, the result indicates that more students have a High Perception of the YouTube learning platform for science education.

HYPOTHESIS 1

There is no significant mean difference in the Perception of Male and Female students towards the YouTube learning platform for learning Science among Secondary School students.

Table 2 Perception concerning Gender

Variable		N	M	SD	df	t-Value	Sig. - p	Result
Gender	M	38	112.8158	12.52426	60	0.53200	0.596	NS
	F	24	111.1250	11.59952				

(*Significance at 0.05 level)

The null hypothesis is accepted as per the table shown above; it is noticed that the determined 't' value (0.53200) is lower than the table value of 1.96 at a significance level of 0.05. Hence, as stated according to the null hypothesis:1, there exists no significant mean difference between the Perception of the YouTube

platform for learning Science with respect to Male and Female secondary school students. Viewing the above mean scores, it is interpreted that Male students (112.8158) have a higher perception of YouTube as a learning platform for science education than Female students (111.1250).

HYPOTHESIS 2

There is no significant mean difference in the Usage of the YouTube platform for learning Science by Male and Female Secondary School students.

Table 3 Usage concerning Gender

Variable		N	M	SD	Mean Rank	Sum of Ranks	Mann-Whitney U	Sig. - p	Result
Usage	M	38	3.11	0.894	31.00	1178.0	437	0.764	NS
	F	24	3.08	0.776	32.29	775.0			
	Total	62							

(*Significance at the 0.05 level)

There is no statistically significant difference in the Usage of YouTube as a Science learning platform by Male and Female secondary school students (Mann-Whitney U = 437, $p = 0.764 > 0.05$). Therefore, Gender does not significantly influence the frequency of using YouTube to learn science among the students in this sample; students of both genders, Male and Female, appear to use YouTube as a platform to learn science with a similar frequency.

HYPOTHESIS 3

There is no significant mean difference in the Perception concerning the Usage of the YouTube learning platform for learning Science among students in Secondary School.

Table 4 Perception concerning Usage

U	N	M	SD	Perception	Sum of Sqs.	df	MSq.	F	Sig. - p	Res
R	14	3.69	0.46	Between Groups	1.144	3	0.381	2.517	0.067	NS
O	33	3.79	0.36							
F	10	4.17	0.34	Within Groups	8.79	58	0.152			
A	5	4.18	0.45							
Tot	62	3.74	0.40	Total	9.934	61				

(U-Usage) (R-Rarely, O-Occasionally, F-Frequently, A-Always)

(*Significance at 0.05 level)

Although students who use YouTube more frequently tend to have higher mean perception scores, the differences among the groups are not significant statistically at the 0.05 level ($p = 0.067$). Therefore, we do not have enough evidence to prove the null hypothesis false. Usage frequency does not significantly influence students'

perception of YouTube as a science learning platform.

HYPOTHESIS 4

There is no significant mean difference in the Usage concerning the Device being used to access the YouTube learning platform for learning Science among students in Secondary School.

Table 5 Usage concerning the Device used

YouTube Device		N	Mean Rank	Chi-square	df	Sig. - p	Result
Usage	Laptop	12	42.21	13.707	2	0.001	S
	Mobile	48	27.64				
	Desktop	2	60.00				
	Total	62					

(*Significance at 0.05 level)

The Kruskal-Wallis H test indicates a significant difference in the usage of YouTube for learning science among the secondary school students with respect to the type of device used ($\chi^2 = 13.707$, $df = 2$, $p = 0.001$). Students who use desktops

and laptops tend to have higher usage compared to those using mobile devices. Therefore, access to a particular device significantly influences how often students use YouTube as a science learning tool.

Table 6 Usage concerning Internet Availability

YouTube Availability Usage of the Internet		N	Mean Rank	Sum of Ranks	Mann- Whitney U	Sig. - p	Result
Usage	Wifi	35	33.19	1161.50	413.5	0.359	NS
	Mobile Data	27	29.31	791.50			
	Total	62					

(*Significance at the 0.05 level)

YouTube Availability Usage of the Internet		N	Mean Rank	Sum of Ranks	Mann- Whitney U	Sig. - p	Result
Usage	Wifi	35	33.19	1161.50	413.5	0.359	NS
	Mobile Data	27	29.31	791.50			
	Total	62					

HYPOTHESIS 5

There is no significant mean difference in Usage concerning the Internet availability to access the YouTube learning platform for learning Science among Secondary School students.

To carry out an analysis on whether there was a significant difference in the usage of YouTube for learning science based on internet availability (Wi-Fi vs. Mobile Data), the Mann–Whitney U test was conducted. Although students with Wi-Fi access had a higher average rank (33.19) than those using mobile data (29.31), at the 0.05 level ($U = 413.5$, $p = 0.359$), the difference was not statistically significant. Thus, access to the internet type does not significantly affect students' usage of

YouTube as a learning platform for science.

FINDINGS

1. There is no significant difference between Female and Male students in Perception towards the YouTube learning platform for learning Science among Secondary School Students.
2. There is no significant difference between the Usage of the YouTube learning platform for learning Science among Secondary School Students with respect to Gender.
3. There is no significant difference in the Perception of the YouTube learning platform for learning Science among the students studying in Secondary school concerning Usage.

4. It is found that there exists a significant mean difference in the Usage of the YouTube learning platform for learning Science among Secondary School students with respect to the Device being used.
5. It is found that there exists no significant mean difference in the Usage of the YouTube platform for learning Science among Secondary School students with respect to Internet availability.

CONCLUSION

While students overall perceive YouTube positively for learning science by having a high perception towards it, Gender or Internet availability does not significantly influence the usage of YouTube, nor does the Perception level affect Usage. However, the type of device used plays a significant role in how frequently students access YouTube, highlighting the importance of device accessibility in digital learning contexts and this era of digital learning.

REFERENCES

1. Neufeld, Dorothy "The 50 Most Popularly Visited Websites in the World," Visual Capitalist 2021.
<https://www.visualcapitalist.com/the-50-most-visited-websites-in-the-world/>
2. Ninković, S. I. O., Adamov, J. M., & Rakita, A. P. STUDENTS' OPINIONS TOWARD USING THE ONLINE PLATFORM SOCRATIVE IN CHEMISTRY EDUCATION. *Journal of Baltic Science Education*, 21(6A), 1181–1190, 2022.
<https://doi.org/10.33225/jbse/22.21.1181>
3. Welch, C. YouTube users nowadays upload 100 hours of video every minute. *The Verge* 2013.
<https://www.theverge.com/2013/5/19/4345514/youtube-users-upload-100-hours-video-every-minute>
4. Wikipedia-contributors. 2025. YouTube. Wikipedia.
<https://en.wikipedia.org/wiki/YouTube>
5. Zone, P. Everything you need to know about YouTube Kids | Parent Zone 2024.
<https://parentzone.org.uk/article/youtube-kids>

A. Leela Glory

Research Scholar, Department of Education
Bharathiar University, Coimbatore, Tamil Nadu

Dr. M. Balasubramaniam

Assistant Professor, Department of
Education Bharathiar University,
Coimbatore, Tamil Nadu