



YouTube Tutorial Videos and Mathematics Performance

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ABSTRACT

YouTube has become one of the mostly used online platforms nowadays. It offers wide range of videos ranging from entertainment to educational videos such as tutorial videos in Mathematics. This quantitative study was conducted to determine the relationship of YouTube tutorial videos in learning Mathematics through the academic performance in Math subjects of the Grade 11 and Grade 12 STEM students of MSU-Buug Campus who were enrolled in the 1st semester of A.Y. 2020-2021. The questionnaire-checklist was administered to the 44 respondents through the use of Google form. The findings revealed that the STEM students' level of using YouTube tutorial videos in learning Mathematics is "oftentimes" and their Mathematics performance is "proficient". Statistical analysis showed that there is a significant relationship between YouTube tutorial videos and Mathematics performance among the STEM students of MSU-Buug Campus. Therefore, it is highly recommended that teachers, particularly Math teachers should innovate instructional materials such as integrating YouTube tutorial videos in Mathematics especially during the pandemic where most classes are done online. For the students, they should consider using YouTube tutorial videos in Mathematics especially during this time where learning is distant.

Keywords : YouTube, YouTube tutorial videos, mathematics performance, STEM students, MSU-Buug Campus.

INTRODUCTION

The 21st century is a period of digital age where technology plays a vital role in any field including education. As the popularity of blended and online learning increases especially during this pandemic, communication technology through social media platforms became the teachers' and students' aid in providing and achieving quality education respectively. One of those social media platforms commonly used nowadays is YouTube, which allows users to watch videos posted by other users and/or upload videos of their own (techterms.com). Apart from the entertainment videos, educational videos such as tutorial videos in Mathematics are also uploaded on YouTube. According to Burger (2011), instructional videos are one form of information technology that have become a popular way to learn outside the classroom. There are various studies that have shown the effectiveness of using multimedia including videos in increasing knowledge. Clifton and Mann (2011) found that the use of YouTube videos has increased students' critical awareness, engagement and facilitated deep learning. In a survey conducted by Kelsen (2009), results revealed that the use of YouTube is favorable by students because it is interesting, relevant and beneficial. Moreover, in another study, results showed that the use of YouTube tutorial methodology had a significant positive effect on perceived student learning (June, Yacoob, & Kheng, 2014).

Recently, due to the Covid-19 pandemic, nearly all schools were

closed and students shifted to online classes. This has significantly increased the amount of time students spend in using digital media. According to Suci (2020), it is time where parents must let their children use YouTube to engage with some educational videos. YouTube can supplement well-planned lessons that have clear instructional goals. It can be used to search for content that supports the inquiry questions of students specially in online class where time and interaction is very limited and students find it hard to express clearly their questions virtually, and the teachers as well cannot cater all the questions presented by students. YouTube can further allow students to engage in a topic more deeply because they are not limited to a single reference, in fact, one can access different videos presented by different people for one topic. Moreover, it is an excellent resource for self-directed learning, especially when it focuses around skill development (Suci, 2020).

Meanwhile, Mathematics is one of the subject areas taught from elementary up to tertiary level and is deemed to be vital not only for our day-to-day activities but also for career opportunities (Martin, 2003). According to Sharma (2018), soon all jobs in America will require a basic knowledge of Mathematics. This is just one of the clear reasons as to there is a need to prepare students mathematically. However, Math subject has been considered a problem to graduate for many community college students (Sharma, 2018). In a survey,



results showed that at least 89% of parents feel that Mathematics is the most difficult subject their children study (Singh, 2018). With that, educators of the 21st century must know how to address this problem of students towards Math specially nowadays where classes are done online.

Therefore, with the bases of the documents cited, the researchers became interested on studying the relationship of YouTube tutorial videos in learning Mathematics through the academic performance in Math subjects of the students in Science, Technology, Engineering and Mathematics (STEM) strand of Mindanao State University-Buug Campus. The academic performance is characterized by the average grade in Math subjects of the students who are using YouTube tutorial videos to aid their learning during the 1st semester of academic year 2020-2021.

Statement of the Problem

This study sought to determine the relationship of YouTube tutorial videos in learning mathematics through the academic performance in Math subjects of the STEM students of MSU-Buug Campus.

The general problem is specified as follows:

- 1) What is the students' level of using YouTube tutorial videos in Mathematics as reference or aid in doing their Math activities?
- 2) What is the level of academic performance of the STEM students in terms of their average grades in Mathematics?
- 3) Is there a significant relationship between the level of using YouTube tutorial videos and the academic performance in Mathematics among the STEM students of MSU-Buug Campus?

METHODOLOGY

Research Design

This study is a quantitative research which mainly used the descriptive type of research design. The study utilized this type to describe the relationship of YouTube tutorial videos in learning Mathematics through the academic performance in Mathematics of the STEM students of MSU-Buug Campus.

Locale of the Study

This study was conducted in Mindanao State University- Buug Campus which is located at Datu Panas, Buug, Zamboanga Sibugay. The institution is a public school whereby majority of the students are technology-literate.

Respondents

The respondents of the study are the Grade 11 and Grade 12 STEM students of MSU-Buug Campus who were officially enrolled in the 1st semester of A.Y 2020-2021. The respondents belong to an academic strand wherein its focus is on Mathematics and Sciences.

Sampling Technique

This study used convenience sampling technique because the researchers relied on the availability of the respondents. Moreover, this technique was used because it is left up to them to respond to the survey-questionnaire administered. The link was left open and available for a period of three weeks. After this period, only those who responded were considered the respondents of this study.

Research Instruments

This study utilized a questionnaire-checklist adapted from Lai (2013) to determine the students' level of using YouTube tutorial videos in learning Mathematics. The questionnaire requires the respondents to indicate their level of agreement corresponding to each item using a 4-point Likert scale of which 4 refers to "always", 3 for "often-times", 2 for "sometimes", and 1 for "never".

Data Gathering Procedure

The researchers first secured formal permission letters addressed to the Dean of the College of Education and to the SHS Principal asking their permission to allow the researchers to conduct the study. After the approval, the researchers coordinated with the advisers of the respondents regarding the study to be conducted by sending letters and presenting the approved permit. The questionnaire-checklist together with the permission letter were distributed to the respondents through the use of Google form. The researchers sent the link to the advisers of the respondents so that it will be posted on their respective messenger group chats. After a period of 3 weeks, the link was closed. The researchers then asked for the respondents' average grades in Math subjects from their advisers.

Once all the data had been gathered, the results were tallied and tabulated using the statistical tool.

Statistical Tool

The data gathered from the questionnaire-checklist were analyzed and interpreted using the chi-square test to test if the hypothesis presented is accepted or rejected.

$$\chi^2 = \sum \frac{(o_i - e_i)^2}{e_i}$$

where:

χ^2 – chi-square

o_i – observe frequency

e_i – expected frequency expected by:
$$e_i = \frac{\text{row total} \times \text{column total}}{\text{overall total}}$$



RESULTS AND DISCUSSIONS

Findings of the Study

1. The students' level of using YouTube tutorial videos in Mathematics as reference or aid in doing their Mathematics activities resulted to a general weighted mean of 2.82 which has a descriptive interpretation of "oftentimes". Therefore, the students' level of using YouTube tutorial videos is "oftentimes".
2. The students' academic performance in terms of their average grades in Mathematics resulted to a mean of 88.22 which falls under the "proficient" level. Therefore, the students' Mathematics performance is "proficient".
3. The chi-square computed value on the relationship of the level of using YouTube tutorial videos in the Mathematics performance of the respondents yielded to a result of 18.001 which is greater than the critical value of 16.919 at 5% level of significance with 9 degrees of freedom. Therefore, there is a significant relationship between the level of using YouTube tutorial videos and the academic performance in Mathematics among the STEM students of MSU-Buug Campus.

CONCLUSIONS

1. The STEM students of MSU-Buug Campus use YouTube tutorial videos in learning Mathematics oftentimes.
2. The Mathematics performance of the STEM students of MSU-Buug Campus is proficient.
3. There is a significant relationship between the level of using YouTube tutorial videos in learning Mathematics and the level of Mathematics performance among the STEM students of MSU-Buug Campus.

Recommendations

After a critical analysis on the results of the study, the researchers recommend the following:

1. Teachers, particularly Math teachers should innovate instructional materials such as integrating YouTube tutorial videos in Mathematics specially during the pandemic where most classes are done online.
2. Students should consider educational videos on YouTube such as tutorial videos in Mathematics as aid or reference in understanding their lessons in Mathematics specially during this pandemic where learning is distant.
3. Educational videos and content on YouTube are a great addition to available resources of a school, hence, its purchase and use is recommended specially in teaching Mathematics.
4. Finally, it is recommended to conduct a study focusing on the correlation between YouTube Tutorial videos and

Mathematics Performance with wider scope to verify the result of this study.

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