



EFFECTIVENESS OF EDUCATIONAL AND INSTRUCTIONAL VIDEOS AS AN ENHANCEMENT TOOL IN LEARNING MATHEMATICS: A LITERATURE REVIEW

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ABSTRACT

This review paper aimed to review articles that explains the effectiveness of instructional video recording in Mathematics as an enhancement tool for students. Definitely, it aims to know the gap pertaining the effectiveness of instructional videos. The focus of the review is to answer the question how effective is the use of instructional video as an enhancing tool especially to the low performing students. The review focuses on the findings and conclusions of the articles reviewed.

INTRODUCTION

Educational and Instructional videos have become the latest trend of E-learning since were embracing the new normal set up of classes. Video, one of the most diversify and powerful virtual learning medium, captures and presents information and offers a sensory learning environment that enhances learners to understand more and retains information better (Fern et al., 2011). This type of learning material is primarily designed for outcome based and learner-centered education. As it is supported by Zhang, et al. (2006), Instructional video allows students to view real objects and realistic scenes, to see sequences in motion, and to listen to narration. It is a powerful medium because of its ability to present information in attractive and consistent manner.

This stated that this 21st century education has been embracing the aid of technology and it plays a vital role for learning in all of the subjects. Students are far different from each other, others are visual learners, auditory, or both. In order for the students to learn, teachers are preparing various strategies and incorporate the utilization of technology. They incorporate instructional and educational videos in their teaching strategies since students are too much engage in different technological resources.

Instructional and educational videos becomes a big portion of teaching – learning process aside from other modalities. As Oxford University (2021) view it as Mathematical knowledge and the ability to use it is the most important means of tackling quantifiable problems, while philosophical training enhances the ability to analyze issues, question received assumptions and clearly articulate understanding. Thus, mathematics could even apply to real world scenario.

In the situation we are in, educational and instructional videos could even effective as enhancement tool in teaching Mathematic subjects. This literature review comprising of various articles, journals, and researches would justify and discuss the role of educational and

instructional videos for boosting the mathematical ability of learners and its effect to the students' skill development.

DISCUSSION

INFLUENCE OF EDUCATIONAL AND INSTRUCTIONAL VIDEOS TO LEARNERS

Educational and instructional videos are the product of technology that aids teaching and learning process during pandemic. It is very evident that using technology in this era is on the rise especially in our current situation.

The study of Hashem Almuslamani (2020) assessed the effect the use educational videos on the participation of 24 student in University of Bahrain where it was found that it has direct and positive effect in increasing students' participation. It shows that educational videos have high effect in the cognitive aspect of students in which it result to learning. In doing so, the University of Bahrain explored the attentions span and understanding of students with the use of internet connections. This is supported with the article written by (Peschke & Trenholm, 2020) the use of fully online (FO) mathematics teaching has been increasing worldwide. Despite claims and findings that mathematics is more challenging to teach FO than face-to-face (F2F), we know little about FO mathematics teaching. FO teaching as having the potential to usher in major pedagogical innovation in mathematics. Some see, for example, the relative student anonymity as helping students feel less threatened as compared to live F2F settings.

Sherin, M. et. al. (2005) proposed that video should be used to help teachers in exploring particular issues. Accordingly, with the usefulness of videos in research conducted in Northwestern University revealed that mathematics teaching is a culturally based activity that follows certain scripts which are resistant to alterations. So, this significantly indicates that educational and instructional videos are effective as support in teaching mathematics subjects. Teachers should be encouraged to integrate technology in the classroom instruction. The abundance of resources can make this an overwhelming endeavor. This recommend simply includes short videos at the end of class to review and reinforce concepts; teacher's should be both encouraged and willing to make necessary changes to their traditional teaching to incorporate instructional videos (Sharma, 2018)

In the research journal published by Manuel Garcie (2017) emphasizes the importance of the unification of education and technology can make a dynamic teaching and learning experience that tailored to the development and transformation of educators and learners needed to power digital economy.

WHY USE VIDEO IN MATHEMATICS

As it is seen by many professionals and conducted researches. Mathematics subject and teachers should embrace the importance of technology for the 21st century learners can relate and absorb every lessons in Mathematics. As stated by Sir Ken Robinson (2013), Creativity is as important as literacy and we should treat it with the same. Instructional materials and strategies in teaching mathematics needs to adapt the modernization in education. Creativity is one of the characteristics of the learners in the 21st century. Utilizing educational and instructional videos in class would be helpful in acquiring knowledge. According to the published research journal of Graham and Berry (1992), Videos can provide data and information for further use. This may

simply be a situation that are presented for consideration by the viewers. The use of it in this way can give a valuable link between the content and the classroom activities.

It can be concluded that the e-learning method is an improvement for adult students who are studying mathematics in the educational stage of high school, provided that it is compared with the expository method. In this case, the improvements occur in motivation, autonomy, participation, concepts, results, ratings and teacher-ratings. Therefore, the use of the e-learning method would be effective for its implementation with adults who study mathematics in high school. In the study of Karadeniz (2015) Online distance learning enables a higher level of interaction compared to asynchronous distance learning. The growing use of the Internet for online distance learning facilitates interaction (Watson, 2010). Interaction and feedback in online distance learning is ensured via human-computer interaction tools, PowerPoint, forums, blogs, podcasts, on-line discussion groups and media, live chat, live visual communication and written chat tools (Beldarrain, 2006; Collis, De Boer, & Slotman, 2001; Jung et al., 2002). . For this reason, various emerging technologies, as well as pen-based technology, have begun to be used in recent years to facilitate interaction and feedback, particularly in applied online distance courses (Mehlhorn et al., 2011). In the study by Wang, Gould, and Fulton (2007), students stated that they found these technologies useful and that they provided a highly interactive learning environment which offered individualized learning opportunity. Students explained that in particular, pen based technologies enabled them to write their notes on the appropriate areas of any graphic provided by the teacher. These results support the opinions of the participants of the current study about the use of digital pen by students.

According to Niess (2010) video clips offer instructional possibilities for engaging students in the watching mode to explore mathematical ideas. Video clips (short excerpts from movies, television shows, professionally prepared educational videos, or personally created videos) can be used to introduce new mathematical concepts and processes, explore mathematics in nature, art, or other contexts in the real world, and engage students in expressing their mathematical understandings as they think about what has been said or displayed.

MATHEMATICS CLASS AMIDST PANDEMIC

Based on the research Fikriah (2021) that several things mathematics learning through e-learning is one of the learning alternatives during the covid-19 pandemic where the use of several applications ranging from WhatsApp, Google Classroom, Zoom, and Google Form helps mathematics learning through e-learning. Virtual Board is an important platform in learning mathematics in the explanation of material, so that every mathematics teacher is expected to be able to use the application in learning mathematics through e-learning. Learning mathematics through e-learning can run optimally if the teacher continues to coordinate with the homeroom teacher, continues to learn about platforms in the use of e-learning, and becomes a creative teacher.

In the research conducted by Khirwadkhar (2020) in Brock University, the online platform offered opportunities for neighboring interactions within the mathematical community to bounce ideas about teaching and learning. Switching to technology in the form of video lessons or situating math problems in real-world contexts were instances where stakeholders interacted with each other. Thus, preparation to the online modalities in teaching Mathematics has become smooth for the teachers and students are flexible in the utilization of technology

more specifically educational and instructional videos. Inviting students to produce mathematical videos was a research project developed before the pandemic. Having students expressing mathematical knowledge with videos, or doing research with videos, was not a solid trend in the literature. However, video production may be an alternative for education during and after the pandemic. Instead of focusing on test results, we can have students producing videos online to express what they have learned in conditions such as the pandemic. Videos can be produced collectively, with help of parents, friends, and different media. Differences in resources, including degree of parental aid received, can be considered by teachers and school systems in a “non-ranking” type of assessment (Borba, 2021). As mentioned by Roche et al (2021) in their research paper that it is not immediately obvious that this particular challenge can be easily overcome by more effective utilization of technology, particularly within a primary school context where peer-to-peer interactions through interactive platforms such as Google Classrooms and Zoom are generally teacher mediated. However, given that inquiry learning that involves challenging tasks seem to continue to engage and interest students during remote learning, it appears to be worthwhile for teachers to explore technology that could be used to provide more opportunities for virtual, social interaction to support peer-to-peer learning and collaborative mathematical work.

SYNTHESIS

The collection of literatures above show that due to pandemic educational system have been extremely affected. Government and other sectors have called out and looked for alternative ways to continue the education of the learners and evade the proposed by many which was the academic freeze. Since the world is continuously abiding on the changed made by the technology, the educational sectors adapted the aid of technology in teaching and learning process. In different subjects, teachers may create different strategies in line with the chosen modalities. More so, teachers in Mathematics have made an adjustments since for them this could be tough for the students to learn. Now, creating video discussion in teaching mathematics according to the literatures presented that it has big impact and effect to the students during this pandemic. Pen Based utilization in video discussion is helpful in term delivering and understanding the lessons. In addition to this, with the aid of other software application in creating video discussion and recordings so the learners can review the lesson presented during the synchronous.

In various researches indicate that in choosing modalities whether hybrid, modular, and online, educational videos and instructional videos could be useful as support for teaching and learning process. To sum up, portraying the effectiveness of educational and instructional videos will make the teaching and learning process during pandemic and this can be used as standard support even during the new normal. In the 21st century teaching – learning environment, students are also improving and adapting to the change. Hence, in this pandemic, technology becomes essential portion and path for the better future of this generation.

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