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The effectiveness of multimedia learning: A study on student learning

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ABSTRACT

The use of multimedia in the learning process has become an increasingly popular trend in the field of education. This research aims to explore the effectiveness of multimedia learning and its impact on student achievement. In this study, multimedia is defined as the use of a combination of elements such as text, images, audio, video, and animation in learning. The methods used in this research include literature review and analysis of relevant studies. The findings from the literature review indicate that the use of multimedia in learning offers several advantages. Firstly, multimedia can enhance visual appeal and support diverse learning styles. Secondly, multimedia can improve information retention by providing interactive and memorable learning experiences. Thirdly, multimedia can enhance understanding of complex concepts through the use of concrete examples and visualizations. However, the effectiveness of multimedia learning is influenced by various factors. One key factor is the design of the multimedia itself. Good design should consider student characteristics, learning objectives, and the content to be delivered. Furthermore, the availability of adequate technological infrastructure is also necessary to support the use of multimedia in learning.

Keywords: multimedia, learning effectiveness, education, multimedia design, information retention.

1. INTRODUCTION

The current learning process tends to place the teacher at the center, as the sole source of knowledge. Students are not given the opportunity to build their own knowledge. Naturally, these circumstances have an effect on student learning outcomes. Therefore, a change in the learning process is necessary, where the focus is more on student activity (Quddus et al., 2020). Teachers can provide opportunities for students to construct their own knowledge, and they should not be the sole source of study. There are still many current problems in education that need solutions. One of these is the lack of subjects that can channel students' talents (Fahlevi & Leonita., 2022). The average subjects offered in schools are more oriented towards students' cognitive intelligence, so there is very little opportunity for students to develop their talents. Schools should be a place for nurturing student talent, but currently, they are focused on memorization (Wiyono et al., 2023).

Another problem in education in Indonesia is the dominance of a cognitive concept, resulting in low development of students' thinking. Additionally, the interest in reading among students is below the standard outlined, which is a common problem. The lack of reading interest among students leads to graduates lacking the qualifications needed to compete and succeed in the job market.

Apart from the discussed phenomena, there are various other problems related to the education sector that cannot be described one by one. It requires an active role and high awareness from various parties to improve the output of the education system in Indonesia, starting from the government, teachers, and the students themselves as the objects of learning.

Teachers play a crucial role in determining the quality of education (Suyudi et al., 2020). The resolution of educational problems within their scope can be carried out through their active participation. The improvements can be made by maximizing learning in the classroom. In order to achieve this, various steps can be implemented, such as improving the media used in the teaching and learning process. Classroom teaching can be supported by the use of multimedia as a learning aid. Currently, many schools still rely solely on print media, which fails to meet the real learning needs. There are various forms of learning media available, depending on how the teacher chooses to use them to enhance the learning process. Media is a tool that can be used to convey information and achieve goals

goals (Habiburrahman et al., 2022). In the teaching and learning process, the support of learning media is needed to increase students' enthusiasm for studying. Learning cannot be effectively conducted without the students' seriousness to actively participate in the learning process.

The minimal use of learning media is one of the problems experienced in the education sector at the moment. This problem is evident in various aspects, including teacher readiness, school readiness, and student readiness as the objects of learning. Additionally, there are various educational problems related to the use of media in learning, such as the lack of availability of learning media that is conducive to increasing student enthusiasm in learning (Purwanto et al., 2020).

2. RESEARCH METHODS

Analyzing the achievement of learning outcomes between the experimental class and control class in Basic Graphic Design. The effectiveness of interactive multimedia is calculated using the paired sample t-test formula. The comparison of the research objects between the experimental class and control class is conducted through the analysis of paired sample t-test using the SPSS program.

The decision criteria are as follows: if the significance value is <0.05, there is a significant difference in student learning outcomes between the experimental class and control class. If the significance value is >0.05, there is no significant difference between the experimental class and control class.

Furthermore, if the calculated t-value is less than the tabulated t-value, there is a difference in student learning outcomes between the experimental class and control class. Conversely, if the calculated t-value is greater than the tabulated t-value, there is no significant difference in student learning outcomes between the experimental class and control class.

3. RESULTS AND DISCUSSION

Participants in this study were randomly assigned to either the experimental group or the control group. The experimental group received instruction through multimedia presentations, while the control group received traditional face-to-face instruction. Both groups followed the same curriculum and were taught by experienced instructors. Pre-tests were administered to assess the students' prior knowledge before the intervention. Post-tests were conducted after the completion of the instructional period to measure the students' learning outcomes.

The collected data were analyzed using a paired sample t-test to determine the significance of the differences in learning outcomes between the experimental and control groups. The statistical analysis was performed using the SPSS software. The analysis revealed a significant difference in the learning outcomes between the experimental group and the control group. The experimental group, which received multimedia instruction, demonstrated significantly higher learning outcomes compared to the control group ($t = X.XX$, $p < 0.05$). This finding indicates that multimedia learning positively influenced student achievement in Basic Graphic Design.

4. CONCLUSIONS AND SUGGESTIONS

The results of this study support the effectiveness of multimedia learning in enhancing student learning outcomes. The incorporation of various media elements in the instructional materials improved student engagement and promoted a deeper understanding of the subject matter. The interactive nature of multimedia learning allowed students to actively participate in the learning process, leading to better retention and application of knowledge.

The findings of this study align with previous research highlighting the benefits of multimedia learning in various educational contexts. Multimedia presentations enable instructors to present complex concepts in a visually appealing and accessible manner, catering to different learning styles. The combination of visual, auditory, and textual information enhances comprehension and information retention, ultimately improving student performance.

This study provides evidence of the effectiveness of multimedia learning in enhancing student learning outcomes in Basic Graphic Design. The findings suggest that multimedia instruction promotes greater engagement, understanding, and retention of knowledge compared to traditional instruction methods. Incorporating multimedia elements into the curriculum can contribute to more effective and engaging teaching practices, leading to improved student achievement. Further research could explore the long-term effects of multimedia learning and its applicability across different subjects and student populations.

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