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# Assessment of Student Satisfaction Levels Regarding the Utilization of Digital Learning Materials in the Subject of Mathematics

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**Abstract:** This research aims to investigate the level of student satisfaction with the use of digital learning materials in the subject of mathematics. The research method employed is quantitative with a survey approach. The research sample consists of 55 students from the mathematics education program who completed a Likert-scale questionnaire comprising 15 items. Data analysis was conducted using the t-test to assess the relationship between student satisfaction and the use of digital learning materials. The results of the data analysis indicate a low negative correlation between student satisfaction and the use of digital learning materials, with a correlation value of -0.611 and a significance level (Sig.) of 0.552. However, the significance value suggests that there is no significant difference in the level of student satisfaction with the use of digital learning materials in mathematics instruction. Despite this, the research provides insights into students' perceptions of the use of digital learning materials in the context of mathematics education. The implications of these findings highlight the need for a more holistic approach in the development and implementation of digital learning materials. Furthermore, there is a need for further research to explore factors influencing student satisfaction and the effectiveness of digital materials in mathematics instruction.

**Keywords:** Satisfaction Level, Digital Learning, Mathematics Instruction

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## A. INTRODUCTION

Digital learning materials in the context of mathematics instruction refer to the utilization of technology and digital media to enhance the teaching and learning process. This definition encompasses the use of various platforms and digital tools, such as educational applications, software, interactive websites, and video tutorials. The key characteristics of digital learning include flexibility, interactivity, and adaptability. Flexibility allows students to learn at times and places that are most convenient for them. Interactivity involves the use of multimedia and visual elements to enrich the learning process. Adaptability means that the materials can be adjusted to the pace and learning styles of individuals. The advancements in technology have significantly influenced the integration of technology in mathematics education. With increasingly widespread access to technology, educators and students can now leverage a variety of digital tools and resources to enhance their understanding and mathematical skills. This includes the use of specialized software to assist in teaching and learning complex

mathematical concepts, as well as digital platforms that enable collaboration and distance learning (Tri Herlambang et al. 2023).

The importance of integrating technology in mathematics education is undeniable, as it has the potential to significantly enhance student engagement, understanding, and achievement. Despite the significance of mathematics as a subject, challenges in teaching mathematics often revolve around the complexity of concepts, a lack of material appeal to students, and difficulties in providing diverse and captivating learning experiences (Widyastuti 2019). Technology emerges as an effective solution to address these challenges by providing tools and resources such as interactive learning software, mathematics applications, and online learning platforms that enable students to actively practice mathematical concepts, explore content in engaging ways, and receive immediate feedback (Magdalena et al. 2024). Thus, the integration of technology in mathematics education not only offers a more dynamic and enjoyable learning approach but also enhances the likelihood of students comprehending mathematical concepts more profoundly and achieving higher proficiency in the subject.

In the process of receiving and applying mathematical learning materials, students are confronted with several factors influencing the level of acceptance and utilization. These factors can be categorized into two main groups: internal factors and external factors. Internal factors encompass aspects such as interest, motivation, and the physical condition of each student (Masyitoh 2023), while external factors involve the role of teachers, family dynamics, as well as the availability of learning facilities both within the school environment and the social environment of students (Kholil 2019). Additionally, aspects such as physical health, the proximity between teachers and students, and the economic situation of the family also have a significant impact on the process of learning mathematics (Khotimah 2020). Bisri Mustofa's perspective highlights that factors influencing student learning can be divided into three categories: internal factors originating from the individual student, external factors involving elements outside the student, and the learning approach used (Fahmiah 2019). Therefore, understanding and paying attention to these factors become crucial for students in receiving and applying mathematical learning materials to achieve a better understanding.

The level of student satisfaction in mathematics learning holds significance as it can motivate students to exert more effort and become more actively involved in their mathematics classes (Elly Sukmanasa 2022) (Mahir et al. 2021). When students are content with their mathematics learning experience, they tend to be more motivated, actively participate, and exhibit a positive attitude towards mathematics (Capinding 2023) (Lee 2024). Various factors influence student satisfaction in mathematics learning, including teacher performance, the quality of learning materials, instructional delivery, and course design (Ramos 2022). For instance, clear task guidelines, constructive feedback, and the instructor's proficiency in the subject significantly impact student satisfaction. Furthermore, engaging technological integration, effective facilitation by instructors, and meaningful class interactions can enhance student satisfaction in online mathematics courses. It is crucial for educators to consider these factors to ensure that students have a positive and gratifying mathematics learning experience.

The utilization of digital learning materials in mathematics education is influenced by various factors, including perceived difficulty of the subject (Cherniaieva 2021). The

acceptance and use of these materials can be influenced by students' problem-solving abilities and their satisfaction with the learning process (Sunendar 2017). The significance of student satisfaction in mathematics education lies in its potential to enhance learning outcomes and engagement (Nasaruddin 2018)(Adisjam and Saparia 2023). Therefore, it is crucial to consider factors such as the perceived difficulty of the subject, problem-solving abilities, and student satisfaction when implementing digital learning materials in mathematics education.

To comprehend and evaluate student satisfaction with digital learning materials, researchers can employ various approaches such as surveys, interviews, direct observations, online activity data analysis, Focus Group Discussions (FGD), and online sentiment analysis (Nurhadiyanto, 2018). Surveys and questionnaires aid in collecting broad data on students' perceptions, while interviews and FGD provide more in-depth insights. Analysis of online activity data and online sentiment assists in tracking interactions and feedback in real-time. However, a common gap in this research is the lack of consistency between satisfaction measurements and academic performance, as well as a limited understanding of how contextual and psychological factors influence students' satisfaction perceptions with digital learning materials. Therefore, further research is needed to refine methodologies, enhance the validity and reliability of instruments, and explore more complex factors influencing student satisfaction with digital learning materials.

The purpose of this research is to investigate and comprehend the level of student satisfaction with the utilization of digital learning materials in the context of mathematics education. This study aims to identify factors influencing student satisfaction with digital learning materials, including technical aspects such as content quality, user interface design, and instructional clarity. By understanding the level of student satisfaction, this research also seeks to provide better insights into the extent to which digital learning materials meet the learning needs and preferences of students in mathematics education. The anticipated outcomes of this research are expected to offer valuable input for the formulation, development, and enhancement of the design and implementation of digital learning materials in mathematics education. This, in turn, can enhance the effectiveness and quality of learning for students.

## B. METHOD

This study employs a quantitative research design with a survey approach. Its objective is to evaluate the Level of Student Satisfaction with the Use of Digital Learning Materials in the Subject of Mathematics. The research subjects consist of 55 mathematics education students. The research instrument used is a questionnaire comprising 15 questions utilizing a Likert scale, where respondents are asked to assess their level of agreement with the presented statements. The study involves several stages, including the formulation of the questionnaire based on the indicators of the research variables, the distribution of the questionnaire to respondents through social media, as well as the tabulation, analysis, and interpretation of the collected data. Data analysis techniques include descriptive statistics and the t-test. The analysis is conducted using JASP software, with the conclusion-drawing criteria that if the significance value (Sig) is less than 0.05, the null hypothesis (H0) is rejected, indicating the

existence of the Level of Student Satisfaction with the Use of Digital Learning Materials in the Subject of Mathematics.

## C. RESULTS AND DISCUSSION

For the purpose of data collection, the researcher distributed the questionnaire over a five-day period to students in the mathematics education program. The respondents consisted of 13 males and 42 females. They were requested to provide their responses to the questionnaire by selecting options that best reflected their opinions, ranging from "strongly agree" to "strongly disagree," in accordance with their individual perspectives and views. The results of the questionnaire were subsequently recorded and presented in Table 1.

**Table 1.** Descriptive Statistics

| | **Males** | **Females** |
|---|---|---|
| Mode | 66.670 | 73.330 |
| Median | 79.335 | 73.330 |
| Mean | 77.335 | 75.101 |
| Std. Deviation | 9.400 | 11.861 |
| Variance | 88.351 | 140.673 |
| Range | 30.670 | 58.670 |
| Minimum | 64.000 | 41.330 |
| Maximum | 94.670 | 100.000 |
| [a] The mode is computed assuming that variables are discreet. | | |

Based on the data presented in Table 1 regarding descriptive statistics for male and female respondents in this study, it is observed that the average response score for male respondents is 77.335, with a standard deviation of 9.400. This indicates that the variation in response scores for male respondents tends to be centered around the mean, with relatively small data dispersion. The variance of response scores for males is 88.351. On the other hand, for female respondents, the average response score is 75.101, with a standard deviation of 11.861. The variance reaches 140.673. The range of response scores for females is wider, characterized by a higher standard deviation compared to male respondents. The minimum and maximum response values for females are also more diverse, with a minimum value of 41.330 and a maximum value of 100.000. These differences suggest significant variation in perceptions and responses between male and female respondents regarding the use of digital learning materials in mathematics education.

The results of this descriptive statistical analysis provide an intriguing initial overview of the perceptions and responses of mathematics education students towards digital learning materials. The differences in mean values, standard deviations, and score ranges between male and female respondents indicate variations in their levels of satisfaction and perceptions regarding the use of digital learning materials. This suggests the need for further research to understand the factors causing these differences and their implications for efforts to enhance the effectiveness of using digital learning materials in mathematics education for both genders of students.

**Table 2.** Paired Samples T-Test

| Measure 1 | Measure 2 | t | df | p |
|---|---|---|---|---|
| Males | Females | -0.611 | 13 | 0.552 |
| *Note.* Student's t-test. | | | | |

Based on the hypothesis testing results using the paired sample t-test presented in Table 2, a t-value of -0.611 was obtained with a significance value (Sig.) of 0.552. The t-value indicates the direction and magnitude of the difference between the samples before and after the treatment or intervention. In this context, since the t-value is negative, it signifies a decrease in the average perception scores after the intervention, although the obtained Sig. value (0.552) is greater than the typically set alpha value (usually 0.05), making it statistically non-significant. The null hypothesis (H0) proposed, stating that there is no difference in perceptions of the Level of Student Satisfaction with the Use of Digital Learning Materials in the Subject of Mathematics, cannot be rejected based on these test results.

The rejection of H0 indicates that the intervention or treatment implemented did not have a significant impact on the level of student satisfaction with the use of digital learning materials in mathematics education. This underscores the necessity for further evaluation of the methods or strategies employed in the implementation of these digital learning materials. There is a possibility that other factors beyond the tested variables may be influencing students' satisfaction levels. Therefore, it is recommended to conduct further research to identify these factors and develop more effective strategies to enhance student satisfaction with mathematics learning through the use of digital materials.

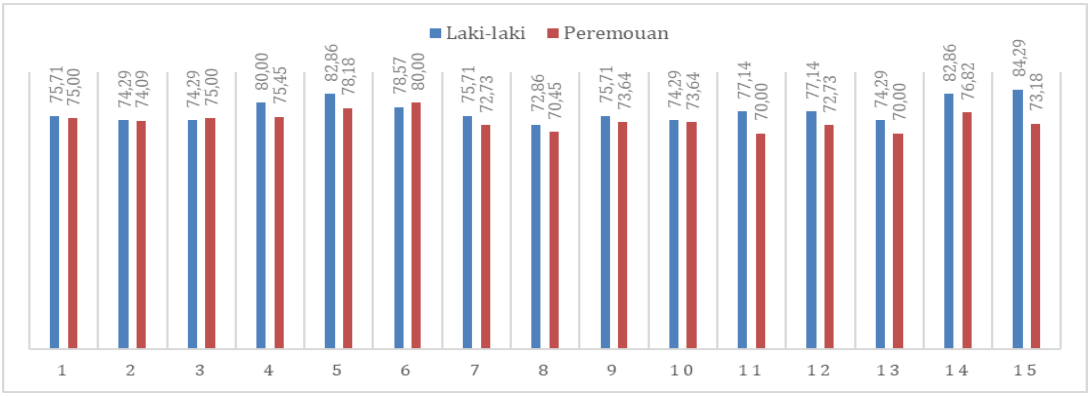


**Figure 1.** Assessment Results of Students on Indicators

The assessment results of the Level of Student Satisfaction with the Use of Digital Learning Materials in the Subject of Mathematics indicate differences between male and female students. The average assessment score for male students is 77.33, with the highest maximum score on a specific indicator being 84.29, and the lowest minimum score being 72.86 on another indicator. This suggests that male students tend to provide relatively high assessments of the use of digital learning materials in the subject of Mathematics. On the other hand, assessments from female students show an average of 74.06, with the highest maximum score on a specific indicator being 80.00, and the lowest minimum score being 70.00 on another

indicator. Although the average assessment scores for female students are slightly lower than those for male students, the variability in assessments on specific indicators indicates diverse perceptions and responses to the use of digital learning materials, providing a basis for improving the quality of learning.

Overall, these assessment results highlight the importance of understanding the preferences and needs of students in the development of digital learning materials in the context of the Mathematics subject. The differences in assessments between male and female students indicate the necessity for different approaches in integrating technology into learning, as well as the importance of developing materials that are inclusive and responsive to the diversity of students. By comprehending this variability in assessments, educational institutions can identify areas that need improvement and make appropriate adjustments to enhance satisfaction and the effectiveness of learning for all students, both male and female.

## D. CONCLUSIONS AND SUGGESTIONS

Based on the results of the data analysis, a t-test value of -0.611 with a significance value (Sig.) of 0.552 was obtained. These findings indicate that there is no significant difference in the level of student satisfaction with the use of digital learning materials in mathematics education. Although there is a difference in the average scores between the samples before and after the intervention, this difference is not statistically significant. The conclusion of this study suggests that the intervention or treatment conducted did not yield a significant impact on the level of student satisfaction with the use of digital learning materials in mathematics education. Therefore, it is recommended to continue the research by expanding the sample size, delving into other factors that may influence student satisfaction, and identifying more effective strategies to enhance student satisfaction with the use of digital learning materials. Additionally, future research could consider contextual factors and specific student needs in the development of more satisfying and supportive digital learning materials for mathematics education.

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