# The Impact of Digital Transformation on Motivation, Material Understanding, and Academic Achievement of UNPAM Postgraduate Students

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**Abstract:** This study aims to examine the effect of the use of digital technology on the academic achievement of Pamulang University (UNPAM) graduate students in the odd semester of the 2024/2025 academic year. This study involved a population of active graduate students, with a research sample taken by simple random sampling of 32 respondents. The approach used in this study is a quantitative approach with an instrument in the form of an online questionnaire designed to measure the variables under study.

The independent variable in this study is the frequency of using digital technology in the learning process, while the dependent variable is academic achievement. The results of this study indicate that there is a significant positive influence between the frequency of use of digital technology and the academic achievement of UNPAM postgraduate students. This finding indicates that the more often students use digital technology in learning, the higher their academic achievement. This research provides an important contribution to the development of technology-based learning strategies in higher education, as well as encouraging the integration of digital technology in the curriculum to improve student learning outcomes.

The results showed that all items in the questionnaire were valid and reliable. In addition, there is a significant positive relationship between the use of digital technology with learning motivation, material understanding, and student academic achievement. The implication of this study is that the integration of digital technology in learning can increase students' learning motivation, material understanding, and academic achievement.

Thus, this research highlights the importance of utilizing digital technology as an effective and relevant learning tool in today's digital era. It also provides a basis for educational policy making that supports the improvement of learning quality through digital technology.

**Keywords**: Digital Transformation, Motivation to learn, Understanding of the subject matter, Academic Achievement, Pamulang University (UNPAM), Postgraduate Students.

## INTRODUCTION

The development of digital technology has significantly changed various aspects of education. Pamulang University, as one of the private universities in Indonesia, has also made efforts to integrate digital technology into the learning process. However, the extent to which this digital transformation has an impact on students' academic performance, especially at the postgraduate level, is still an interesting question to research. This study aims to fill the gap by analyzing the relationship between the use of digital technology and academic achievement of UNPAM postgraduate students. The population in this study is active postgraduate students in the odd semester of the 2024/2025 academic year. Data will be collected through a survey. The results of this study are expected to contribute to the development of educational policies that are more effective in utilizing digital technology to improve the quality of learning.

The rapid advancement of digital technology has drastically changed the world of education. The application of various digital platforms and tools in learning now opens up many new opportunities for students. We can easily access learning materials, collaborate with friends, and develop relevant skills for the world of work. Pamulang University, as a higher education institution that always adapts to the times, has been trying to integrate digital technology into various academic activities.

However, the question of the extent to which this digital transformation has an impact on improving students' motivation to learn, comprehension of material, and academic achievement, especially at the postgraduate level, remains an interesting topic for further study. Previous studies have highlighted the positive potentials of utilizing digital technologies in learning, such as increased motivation to learn, flexibility in time and place of learning, and wider access to learning resources. However, these studies also indicate challenges and constraints that need to be addressed, such as the digital divide, lack of digital skills, and lack of adequate infrastructure support.

### Problem Formulation

Based on the background that has been explained, this research aims to answer the following important questions:

1. How often do UNPAM postgraduate students use digital technology in their learning activities?
2. Is there a significant relationship between the use of digital technology and the learning motivation of UNPAM postgraduate students?
3. Is there a significant relationship between the use of digital technology and material comprehension of UNPAM postgraduate students?

### Research Objectives

The main objective of this study is to analyze the relationship between the use of digital technology and academic achievement of UNPAM postgraduate students. Specifically, this study aims to:

1. Describe the frequency and types of digital technology used by UNPAM postgraduate students in their learning activities.
2. Testing the hypothesis that there is a positive and significant relationship between the use of digital technology and learning motivation of UNPAM postgraduate students.
3. Identifying factors that can moderate or mediate the relationship between the use of digital technology and the academic understanding of UNPAM graduate students.

### Research Benefits

The results of this study are expected to make a useful contribution to several parties, here are some of the benefits that can be obtained, among others:

1. For Pamulang University: Provide insights and recommendations to improve the application of technology in learning.
2. For students: Provide information that can help students understand the impact of digital transformation on their learning process.
3. For educational technology developers: Provide an overview of the challenges students face in utilizing technology and how to improve its effectiveness.

## LITERATURE REVIEW

1. Digital Transformation in Education

   Digital transformation in education refers to the application of technology to improve the way education is delivered and received. Guri-Rosenblit (2009) suggests that digital technology in education includes the use of Learning Management Systems (LMS), e-learning platforms, video conferencing, and other digital tools to support teaching and learning. At Pamulang University, the use of platforms such as Google Classroom, Zoom, and WhatsApp has become part of online learning. These technologies provide students with easier access to course materials and accelerate interaction between students and lecturers, which in turn can increase student engagement in the learning process.

2. Online Learning and Academic Achievement

   Online learning, which is an important part of the digital transformation of education, affects students' academic performance. Bates (2015) stated that online learning allows students to manage their own learning time, increasing learning flexibility and efficiency. Prasetyo and Wulandari (2021) also show that students who actively use technology in online learning, such as online assignments and group discussions, show better academic performance. However, as stated by Keller (2010), the effectiveness of online learning is highly dependent on students' motivation, their digital skills, and the interaction between lecturers and students.

3. Factors Affecting Student Academic Achievement

   Students' academic performance is influenced by various factors, including motivation, teaching quality, and engagement in learning. Joubert (2012) mentioned that good academic performance is often related to the level of students' active engagement in learning and interaction with lecturers and classmates.

4. Positive and Negative Impacts of Digital Age Education

   According to Asari, et al (2023) In the digital awakening, many impacts are felt in this digital era, both positive and negative impacts. The positive impacts of the digital era include:

   a. The required information is accessed faster and easier.
   b. The evolution of innovation in various digitally-oriented fields has made our work easier.
   c. The emergence of digital-based mass media, especially electronic media as a source of public knowledge and information.
   d. Improve the quality of human resources through the development and use of information and communication technology.
   e. The emergence of diverse learning resources such as online libraries, online learning materials, online discussions can improve the quality of education.
   f. The rise of e-commerce, such as online stores that offer a wide range of products and are easily available.

   There are negative effects of the digital era that must be anticipated and resolved to avoid losses, including:

   a. The threat of infringement of Intellectual Property Rights (IPR) due to easy access to data and causing plagiarism to commit fraud.
   b. The threat of shortsightedness when the child appears to be trained to think briefly and unfocusedly.
   c. Threatening to utilize knowledge to commit crimes such as overcoming the banking system, etc. (moral decadence).
   d. Failing to make information technology an effective media or learning tool, for example, in addition to downloading e-books, but also printing them.

5. Learning Motivation

According to Nurmin (2019) Self-motivation comes from a strong desire to achieve a certain goal. Positive thoughts and adherence to the stated course of activities are also motivational factors. According to Rachman (2015) Motivation can be interpreted as a person's strength (energy) that can cause the level of persistence and enthusiasm in carrying out an activity, both from within the individual himself (intrinsic motivation) and from outside the individual (extrinsic motivation). How strong the motivation an individual has will determine a lot about the quality of behavior he displays, both in the context of learning, working and in other lives. The study of motivation has long had its own appeal for educators, managers, and researchers, especially in relation to the interests of efforts to achieve one's performance (achievement).

Motivation is formulated as a condition that makes students have the will to achieve certain goals through the implementation of a task. Motivated students tend to persist and do not give up easily in carrying out tasks. Ariani (2022) reveals that learning motivation is the overall psychic driving force within a person that gives rise to learning activities, ensures the continuity of learning activities and gives direction to these learning activities in order to achieve a goal.

**RESEARCH METHODOLOGY**

This study aims to analyze the Impact of Digital Transformation on the Academic Achievement of UNPAM Postgraduate Students. This research methodology includes several important stages including research design, population and sample, research instruments, data collection procedures, and data analysis techniques.

1. Research Design

In line with the research objective to measure the impact of digital transformation on the academic performance of UNPAM postgraduate students, this study uses a descriptive quantitative approach that aims to describe the impact of digital transformation on the academic performance of postgraduate students at UNPAM. This method allows researchers to test hypotheses empirically and obtain reliable data to support research conclusions.

2. Population and Sample

The population in this study were all active postgraduate students, both from semester 1, semester 2, and semester 3 of Pamulang University in the 2024/2025 academic year.

Given the limited time and resources, researchers took a sample of 32 students by simple random sampling. This sample is considered representative because each student has the same opportunity to be selected.

The inclusion criteria in this study were students who were actively attending lectures and had used the online learning platform for at least one semester. Meanwhile, students who were on leave or did not have internet access were not included in the sample.

3. Research Instruments

The instrument used in this study is a questionnaire consisting of 22 closed questions regarding the use of technology in learning, as well as students' perceptions of its impact on their academic performance. The questionnaire was designed to measure the frequency of digital technology use, students' perception of ease of use, and its effect on academic performance.

4. Data Collection Procedure

Data collection is a crucial stage in research. It aims to collect relevant and accurate information to answer research questions. In general, the data collection process can be divided into several stages.

The Preparation Stage is a very important initial stage. At this stage, researchers will design and develop research instruments that will be used to collect data. Commonly used research instruments are questionnaires, interview guidelines, or observation guidelines. After the instrument is designed, the researcher will test the instrument to ensure that the instrument is valid and reliable. Validity indicates the extent to which the instrument

measures what it is supposed to measure, while reliability indicates the extent to which the instrument provides consistent results if used repeatedly.

The data collection stage is the stage of implementing the research instruments that have been prepared. At this stage, data is collected from predetermined data sources. Data sources are individuals (respondents).

The data processing stage is the last stage in the data collection process. At this stage, the data that has been collected will be processed and analyzed. By following systematic data collection procedures, researchers can obtain accurate, relevant, and reliable data to answer research questions.

5. Data Analysis Technique

Data analysis in this study will be carried out quantitatively. The data obtained from the questionnaire will be processed using descriptive statistics to describe the characteristics of respondents and research variables. Quantitative data analysis in this study will be carried out using IBM SPSS Statistic 21 software. The data obtained from the questionnaire will be processed to produce a statistical description of the respondents' characteristics. Furthermore, Pearson correlation test will be conducted to test the relationship between the frequency of using digital technology and the level of learning motivation, material understanding, and academic achievement. The results of the analysis will be presented in tabular form to facilitate interpretation.

## RESULTS AND DISCUSSION
### Results
This study collected data from students of management study program S2, postgraduate, Pamulang University. The data collection process was conducted through an online questionnaire distributed to students randomly to obtain accurate and relevant information about their experience in using digital technology in learning.

This study uses quantitative research which aims to measure the effect of digital transformation on the academic performance of UNPAM postgraduate students. This study has 4 variables, namely, independent variables or variables that affect and dependent variables or variables that are affected. This study was conducted to determine and measure the effect of digital transformation as an dependent variable on motivation, material understanding, and academic achievement of the independent variable. This study aims to examine whether there is a relationship between the application of digital transformation in the learning process of graduate students at Pamulang University.

In this study, a series of statistical tests were applied in stages. It starts with validity and reliability tests to ensure the research instruments are reliable. Next, the coefficient test is used to analyze the relationship between the research variables. Finally, hypothesis testing was conducted to answer the research questions that had been posed.

### Discussion
### Validity Test Results
The first phase in analyzing the data of this study is to conduct a validity test (data validity test) to measure whether the questionnaire is valid or not. The validity test is carried out by testing the correlation between the item score and the total score of each variable. The criteria for an instrument to be said to be valid and not according to Sugiyono (2019) is by comparing r count with r table, using pearson correlation statement items are said to be valid if the significant level is below 0.05. Based on the table below, it is known that the variables of learning motivation (Y1), material understanding (Y2) and academic achievement (Y3) have a significant value smaller than 0.05. so it can be concluded that all statements in the study are valid. The results of the validity test in this study were carried out using Statistical Package for Social Science (SPSS) software for window Version 21.

| Statement Item | Correlation Value | ignificance Value | Valid / Invalid |
|---|---|---|---|
| Y1.1 | 0.41 | 0.018 | Valid |
| Y1.2 | 0.56 | 0.001 | Valid |
| Y1.3 | 0.62 | 0.000 | Valid |
| Y1.4 | 0.60 | 0.000 | Valid |
| Y2.1 | 0.68 | 0.000 | Valid |
| Y2.2 | 0.58 | 0.000 | Valid |
| Y2.3 | 0.52 | 0.002 | Valid |
| Y2.4 | 0.67 | 0.000 | Valid |
| Y3.1 | 0.73 | 0.000 | Valid |
| Y3.2 | 0.56 | 0.001 | Valid |
| Y3.3 | 0.62 | 0.000 | Valid |
| Y3.4 | 0.61 | 0.000 | Valid |

**Reliability Test Results**

Furthermore, the reliability test was carried out to measure a questionnaire which is an indicator of the variable. This reliability test is carried out to test the consistency of the answers from respondents through the statements given. Reliability test according to Sugiyono (2019) is used to show the level of reliability, accuracy, accuracy and consistency of the indicators in the questionnaire. So that a good research besides having to be valid must also be reliable so that it has accuracy value when tested in different periods. Reliability testing using the Alpha Cornbach's reliability coefficient method. Provided that if the Cronbach's alpha value α> 0.60 then the questions / statements included in the questionnaire are declared reliable or reliable. By using the Cronbach Alpha statistical method with a significance of more than 0.6.

The table below shows that the variables of learning motivation (Y1), material understanding (Y2), academic achievement (Y3), and the use of digital technology (X) have a Cronbach's Alpha value greater than 0.6. This indicates that the statement items in this study are reliable. So that each statement item used will be able to obtain consistent data and if the statement is submitted again, an answer that is relatively the same as the previous answer will be obtained. The results of the reliability test in this study were carried out using the Statistical Package for Social Science (SPSS) software for window Version 21.

| Reliability Statistics | |
|---|---|
| Cronbach's Alpha | N of Items |
| ,960 | 12 |

Based on the Cronbach's Alpha value from the table above, it has a very high value (0.960), it can be concluded that the instrument used in this study has very good reliability. This means that the data obtained from the instrument is reliable and can be used to draw valid conclusions.

**Coefficient Test Results**

According to Sugiyono (2019) The correlation coefficient is a number of strong relationships between two or more variables. The product moment correlation coefficient is a correlation technique used to find relationships and prove the hypothesis of a relationship between two variables when the data from the two variables or are the same. The correlation coefficient test is a statistical method used to measure how strong the linear relationship is between two numerical variables. In other words, this test helps us find out if there is a significant relationship between two variables and how close the relationship is. By understanding the basic concepts and application of the correlation test, we can better interpret research results.

**Correlations**

|  |  | Learning Motivation | User an Digital Technology in Learning |
|---|---|---|---|
| Learning Motivation | Pearson Correlation | 1 | .706** |
|  | Sig. (2-tailed) |  | ,000 |
|  | N | 32 | 32 |
| User an Digital Technology in Learning | Pearson Correlation | .706** | 1 |
|  | Sig. (2-tailed) | ,000 |  |
|  | N | 32 | 32 |

**. Correlation is significant at the 0.01 level (2-tailed).

Based on the test results in the table above regarding the Use of Digital Technology in Learning on Learning Motivation, the correlation coefficient value is 0.706 where the value is in the interval 0.61-0.80, the meaning is that two variables have a strong level of relationship.

**Correlations**

|  |  | Material Comprehension | User an Digital Technology in Learning |
|---|---|---|---|
| Material Comprehension | Pearson Correlation | 1 | .746** |
|  | Sig. (2-tailed) |  | ,000 |
|  | N | 32 | 32 |
| User an Digital Technology in Learning | Pearson Correlation | .746** | 1 |
|  | Sig. (2-tailed) | ,000 |  |
|  | N | 32 | 32 |

**. Correlation is significant at the 0.01 level (2-tailed).

Based on the test results in the table above regarding the Use of Digital Technology in Learning on Material Understanding, the correlation coefficient value is 0.746 where the value is in the interval 0.61-0.80, the meaning is that two variables have a strong level of relationship.

**Correlations**

|  |  | Academic Achievem ent | User an Digital Technology in Learning |
|---|---|---|---|
| Academic Achievem ent | Pearson Correlation | 1 | .542[**] |
|  | Sig. (2-tailed) |  | ,001 |
|  | N | 32 | 32 |
| User an Digital Technology in Learning | Pearson Correlation | .542[**] | 1 |
|  | Sig. (2-tailed) | ,001 |  |
|  | N | 32 | 32 |

[**]. Correlation is significant at the 0.01 level (2-tailed).

There is a significant positive correlation between Academic Achievement and the Use of Digital Technology in Learning. This means that the more often students use digital technology in learning, the higher the academic achievement they achieve. The correlation value of 0.542 indicates that the relationship between the two variables is moderate or fairly strong. The results of this correlation analysis indicate that the use of digital technology in learning has a positive influence on student academic achievement. In other words, the integration of technology in the teaching-learning process can be one of the factors that contribute to improving student achievement. The coefficient test results in this study were carried out using the Statistical Package for Social Science (SPSS) software for window Version 21.

**Hypothesis Test Results**
**Hypothesis Testing Partially (T test) and Simultaneously (F test)**
Hypothesis testing is a very important statistical tool for making decisions based on data. By understanding the basic concepts and steps of hypothesis testing, we can analyze data more accurately and objectively.

According to Sugiyono (2018) "The t test or partial test is a test used to determine whether partially the independent variable has a significant effect or not on the dependent variable". Testing the significant level of the correlation coefficient used to determine the meaning of the degree of relationship between variable (X) and variable (Y) used with the correlation coefficient. The T-test: This is a statistical tool used to compare the means of two groups of data. In this case, we are comparing the effect of Using Digital Technology in Learning on each variable. Significance Level (5%): This is the limit we set to decide whether our results are significant or not. If the significance value is less than 5%, we consider the result significant, meaning that there is a strong enough influence between the variables we studied.

Hypothesis testing of learning motivation variables (Y1), material understanding (Y2), academic achievement (Y3), and the use of digital technology (X) is done with the t test (partial test). In this study, the T table was obtained 1.701 with the formula (df = n-k), namely 32-4 = 28. The criteria for comparing the significance value with the 0.05 level are as follows:
1. If t count < t table H0 accepted and H1 is rejected
2. If t count > t table H0 is rejected and H1 is accepted

According to Sugiyono (2018) "This test is used to test whether the two independent variables simultaneously or together have a significant effect on the dependent variable". The F test is used to

see if there is a strong relationship between several variables together. In this study, we want to know whether the use of digital technology in learning can affect each variable. To test the effect of non-physical work environment variables and work stress simultaneously on employee performance, the F statistical test (simultaneous test) was carried out with a significance of 5%. In this study, a significance criterion of 5% (0.05) was used, namely comparing the calculated F value with the F table with the following conditions:

1. If the sig value <0.05 then simultaneously there is an influence of variable X on Y
2. If the sig value> 0.05 then simultaneously there is no effect of variable X on Y

To determine the amount of F-table, it is sought with the provisions of df = F-table: F( K - 1; n - k) = F (4 - 1; 32 - 4) / F = (3; 28) = 2.947. The results of hypothesis testing in this study were also carried out using Statistical Package for Social Science (SPSS) software for window Version 21.

## The Use of Digital Technology in Learning on Learning Motivation

**Coefficients[a]**

| Model | | Unstandardized Coefficients B | Std. Error | Standardized Coefficients Beta | t | Sig. |
|---|---|---|---|---|---|---|
| 1 | (Constant) | 10,489 | 2,020 | | 5,194 | ,000 |
| | Learning Motivation | ,769 | ,141 | ,706 | 5,455 | ,000 |

a. Dependent Variable: Users of Digital Technology in Learning

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 92,371 | 1 | 92,371 | 29,756 | .000[b] |
| | Residual | 93,129 | 30 | 3,104 | | |
| | Total | 185,500 | 31 | | | |

a. Dependent Variable: Users of Digital Technology in Learning
b. Predictors: (Constant), Learning Motivation

From the coefficients table above, we can see that the use of digital technology in learning has a significant influence on learning motivation. This is shown by the very large t value (5.455) and the very small significance value (0.000). This means that we can reject the null hypothesis (H0) which states that there is no relationship between the two variables.

And from the ANOVA table above, it shows the variability that can be explained by our regression model. The very large F value (29.756) and the very small significance value (0.000) indicate that the overall regression model is highly significant. That is, the variable "use of digital technology in learning" significantly affects "learning motivation".

## Use of Digital Technology in Learning on Material Understanding

**Coefficients[a]**

| Model | | Coefficients B | Std. Error | ed Beta | t | Sig. |
|---|---|---|---|---|---|---|
| 1 | (Constant) | 9,847 | 1,899 | | 5,185 | ,000 |
| | Material | ,848 | ,138 | ,746 | 6,144 | ,000 |

a. Dependent Variable: Users of Digital Technology in Learning

**ANOVA[a]**

| Model | | Squares | df | Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 103,351 | 1 | 103,351 | 37,743 | .000[b] |
| | Residual | 82,149 | 30 | 2,738 | | |
| | Total | 185,500 | 31 | | | |

a. Dependent Variable: Users of Digital Technology in Learning
b. Predictors: (Constant), Material Comprehension

From the coefficients table above, we can judge that the use of digital technology in learning has a very significant influence on material understanding. This is indicated by the very large t value and the very small significance value.

And the ANOVA table above also shows the variability that can be explained by our regression model. The very large F value (37.743) and the very small significance value (0.000) indicate that the overall regression model is highly significant. That is, the variables "the use of digital technology in learning" significantly affects the variable "material understanding".

## Use of Digital Technology in Learning on Academic Achievement

| Coefficients[a] | | | | | |
|---|---|---|---|---|---|
| Model | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
| | B | Std. Error | Beta | | |
| 1   (Constant) | 14,481 | 1,985 | | 7,294 | ,000 |
| Academic Achievement | ,499 | ,141 | ,542 | 3,534 | ,001 |

a. Dependent Variable: Users of Digital Technology in Learning

| ANOVA[a] | | | | | | |
|---|---|---|---|---|---|---|
| Model | | Sum of Squares | df | Mean Square | F | Sig. |
| 1 | Regression | 54,531 | 1 | 54,531 | 12,491 | ,001[b] |
| | Residual | 130,969 | 30 | 4,366 | | |
| | Total | 185,500 | 31 | | | |

a. Dependent Variable: Users of Digital Technology in Learning

b. Predictors: (Constant), Academic Achievement

The results from the coefficients table above show that students with better academic performance tend to use digital technology more often in their learning process.

And the ANOVA table above shows the variability that can be explained by our regression model. The very large F value (12.491) and very small significance value (0.001) indicate that the overall regression model is highly significant. That is, the variable "academic achievement" significantly contributes to explaining the variation in the variable "use of digital technology in learning".

## CONCLUSIONS AND SUGGESTIONS
### Conclusion
This study provides strong empirical evidence of the positive impact of using digital technology in the context of student learning. The positive correlation found between technology use and increased learning motivation, material comprehension, and academic achievement is in line with global trends that recognize the importance of technology integration in modern education.

Increased Learning Motivation: Digital technology, with its various interactive and engaging features, is able to stimulate students' interest in learning. Elements such as data visualization, simulations, and educational games make learning more fun and relevant to everyday life.

Deeper Understanding of Material: The use of technology allows students to access various learning resources independently and flexibly. Features such as video tutorials, interactive quizzes, and online discussion forums facilitate better understanding of concepts and allow students to learn at their own pace.

Improved Academic Achievement: The combination of active learning, accessibility of materials, and quick feedback through technology contributes to improved student academic performance. This shows that technology is not just a learning aid, but can also be a catalyst for achieving higher learning goals.

While technology has a significant role, it is important to remember that successful learning is also influenced by other external factors. Support from lecturers, a conducive learning environment, and students' intrinsic motivation are important components that complement each other in the learning process.

The implementation of blended learning model at University of Pamulang is in line with the findings of this study. By combining online and offline learning, students are given the flexibility to learn according to their individual learning styles. In addition, collaboration between students through online and offline discussions also encourages the formation of a mutually supportive learning community. By developing this research further, it can serve as a basis for developing policy recommendations or further development programs in the field of education.

### Suggestion
Based on the findings of this study, there are several suggestions that can be given to stakeholders in several sectors, including:
1. Improving Digital Literacy: Digital literacy training and education programs should be strengthened to ensure that teachers, lecturers, students, managers and employees have

the necessary skills to utilize these technologies effectively. This will help address the digital divide and increase technology adoption.

2. Supporting Policies and Regulations: Policymakers need to formulate regulations that support technological innovation while ensuring data protection and privacy. These policies should include data security standards, privacy protocols, and incentives for technology adoption.
3. Follow-up research: Further research is needed to identify factors that influence the effectiveness of technology use in different contexts (e.g. socioeconomic level, region, or school type).

Technology has great potential to improve the quality of education. However, its success depends largely on how it is integrated into the learning process and how we utilize it effectively. With careful planning and support from various parties, we can create a more innovative, engaging and effective learning environment. Building partnerships with the technology industry to develop more innovative and relevant solutions is also a good solution, because with a comprehensive and collaborative approach, we can maximize the potential of technology to improve the quality of education in Indonesia.

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