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# IMPLEMENTATION OF DIGITAL TOOLS IN CLASSROOM MANAGEMENT: A STUDY OF STUDENT'S ENGAGEMENT IN MERAUKE MUSAMUS UNIVERSITY

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***Abstract.*** The implementation of digital technology in management is expected to bring positive impacts on learning. This research aims to investigate the use of digital tools in classroom management and its effect on student engagement at Merauke Musamus University. A mixed-method quantitative-qualitative approach is employed, with a quasi-experimental research design that involves test, survey, and interview. This research involved 100 students from the Faculty of Economics and Business: Class A and Class C from the Management department and Class C from the Accounting department. The data were collected thought pre-test & post-test, and questionnaires. The result of the test reveals the average score of experimental groups are higher 84.20 compared to the control groups' 77.40, t-value (5.665) is greater than the critical t-value (1.660) at a significance level of 5%. The data from the observation and interview show the students positive attitudes towards the implementation of digital tools in learning. The findings indicate that the implementation of digital tools in classroom management positively impacted student engagement in both the experimental and control groups. However, the experimental group, which received the intervention of digital tools, demonstrated higher engagement compared to the control group, which did not receive the intervention.

**Keywords:** Digital Tools, Classroom Management, Student Engagement

***Abstrak.*** Penerapan teknologi digital dalam manajemen diharapkan dapat membawa dampak positif pada pembelajaran. Penelitian ini bertujuan untuk menyelidiki penggunaan alat digital dalam manajemen kelas dan pengaruhnya terhadap keterlibatan mahasiswa di Universitas Musamus Merauke. Pendekatan kuantitatif-kualitatif dengan metode campuran digunakan, dengan desain penelitian kuasi-eksperimental yang melibatkan tes, survei, dan wawancara. Penelitian ini melibatkan 100 mahasiswa dari Fakultas Ekonomi dan Bisnis: Kelas A dan Kelas C dari jurusan Manajemen dan Kelas C dari jurusan Akuntansi. Data dikumpulkan melalui pre-test & post-test, dan kuesioner. Hasil tes menunjukkan nilai rata-rata kelompok eksperimen lebih tinggi 84,20 dibandingkan dengan kelompok kontrol 77,40, nilai-t (5,665) lebih besar dari nilai-t kritis (1,660) pada tingkat signifikansi 5%. Data dari observasi dan wawancara menunjukkan sikap positif siswa terhadap penerapan alat digital dalam pembelajaran. Temuan ini menunjukkan bahwa penerapan alat digital dalam manajemen kelas berdampak positif terhadap keterlibatan siswa baik pada kelompok eksperimen maupun kelompok kontrol. Namun, kelompok eksperimen, yang menerima intervensi alat digital, menunjukkan keterlibatan yang lebih tinggi dibandingkan dengan kelompok kontrol, yang tidak menerima intervensi.

**Kata Kunci:** Teknologi, Digital, Manajemen Kelas

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## INTRODUCTION

Classroom management plays a crucial role in creating a conducive learning environment and promoting student engagement (Hew & Cheung, 2013). With advancements in technology, the integration of digital tools in classroom management has become increasingly common (B et al., 2015). However, there is a need to examine the impact of these digital tools on student engagement and learning outcomes. Digital technology has transformed communication, social life structures, collaboration opportunities, and shaped new lifestyles. In a decade, approximately two-thirds of students in public education will be fully immersed in digital-based learning environments (Schleicher, 2018). The teaching and learning process determines the success of student outcomes. These outcomes refer to the achievement of learning indicators and understanding by the students. Through technology-based learning, students can benefit by utilizing technology to enhance their understanding of the subject matter.

Technology influences student engagement, but its impact cannot be separated from the curriculum since technology, content, and digital methods are interconnected and cannot be considered separately (Cheung & RE, 2020) In this context, technology becomes a means to support student learning in higher education since it has been integrated into the higher education curriculum. The aim is to support a learning process that aligns with the demands of a digital-based era. The development of the education world today is continuously increasing. Rapid changes in technological advancements with various cutting-edge products have had a significant impact on various sectors of the education world (Situmorang, 2020). Therefore, learning and educational practices in schools need to be updated to keep up with technological developments in the present time (Arianti, 2023). The using of technology teaching learning will increase the student's motivation in learning (Pulungan, 2020).

Koehler (Koehler et al., 2018) introduced the TPACK (Technological Pedagogical Content Knowledge) framework, which defines three areas of knowledge required for effective technology integration in educational practices. First is the technological content knowledge, which includes knowledge of both the technological system and the subject matter. Second is the pedagogical content knowledge, which is associated with knowing how to organize, represent, and adapt specific topics based on the students' interests and abilities. Third is the technological pedagogical knowledge, which refers to understanding how technology can limit or, conversely, enhance learning. Technological pedagogical content knowledge means having knowledge of the relationship between technology, pedagogy, and content. This knowledge is essential for developing appropriate teaching strategies. Pedagogical content knowledge also requires instructors to have a systematic understanding of the subject matter, education, and

the collaborative interaction of technology to ensure the education process is effective and efficient.

Technology-based learning also supports the tools for educators to deliver materials more efficiently and effectively. This is due to technology facilitating access for both educators and learners at any time and place. For example, platforms like YouTube or Google Classroom serve as learning tools accessible to both instructors and students for tasks and grade inputs. Therefore, learning through the use of technology becomes a crucial aspect to be studied in this research to examine outcomes or impacts on students in specific subjects. The purpose of technology to increase the understanding of students conceptual and expand the intuition availiability (Putrawangsa & Hasanah, 2020). The dimensions of digital literacy analyzed in this study consist of information, communication, content-creation, safety and problem-solving (Jumila, 2018). Digital competency is a set of knowledge, skills, attitudes needed when using ICT and digital media for various needs (Hidayat & Khotimah, 2019).

This research focuses on exploring the implementation of digital tools, such as electronic device, in classroom management at Merauke Musamus University and its effects on student engagement. By accessing electronic device, such as smartphone and laptop, students available get to access online books and another references to support their education program. Education is a sector that continually evolves and adapts to technological advancements. One significant change in the context of education is the use of digital tools in classroom management. In an era dominated by digital technology, it is essential to investigate the implementation of these tools in the learning environment and understand their impact on student engagement and learning outcomes.

The purpose of this research is to study the implementation of digital tools in classroom management at Merauke Musamus University and its impact on student engagement. The study will involve students and instructors as primary participants to gain insights into their experiences with using digital tools in learning. The research will employ both qualitative and quantitative approaches to collect and analyze data. A quantitative survey will be distributed to 100 students from the Faculty of Economics and Business, with observation checklists conducted at Merauke Musamus University to measure their level of engagement in digital-based learning. The observation checklist will use rating scales or numbers for each item, and statistical analysis such as calculating the mean or median will measure the level of implementation or student engagement. Additionally, qualitative interviews will be conducted with students and instructors to gain a deeper insight into their experiences with the use of digital tools and their perceptions of its impact on learning.

Through this research, it is hoped that a better understanding of the implementation of digital tools in classroom management and its influence on student engagement and learning outcomes in the environment of Merauke Musamus University will be obtained. The findings of this research will contribute to our understanding of the effectiveness of digital tools in enhancing classroom management and student learning experiences. Quantitative data obtained from the surveys will be analyzed using descriptive statistics and regression analysis to examine the relationship between the use of digital tools and student engagement (Johnson et al., 2015). Qualitative data from interviews will be analyzed thematically to identify key themes and patterns related to student experiences and perceptions.

The implementation of digital technology in classroom management can bring significant benefits to student engagement and learning outcomes. By using interactive and supportive digital tools for learning, students can become more actively engaged in the learning process and develop skills relevant to the digital era. The use of digital tools in classroom management can expand the accessibility and flexibility of learning. With digital tools, students can access learning materials online, access additional resources, and engage in self-directed learning beyond the traditional classroom environment.

As for the theory used to examine the impact of student engagement using digital technology, Fredericks' theory of Student Engagement Dimensions (Nikomo et al., 2021) is applied.. According to Fredericks, there are three dimensions to consider when assessing student engagement in the learning process: Behavioral, Cognitive, and Emotional. The behavioral dimension refers to the level of participation of students, including effort and persistence in digital-based learning. The cognitive dimension involves students' level of understanding in technology-based learning. The emotional dimension encompasses students' reactions during the learning process.

Several research papers are used as references to support this study. For instance, the research that written by Ruta Girdizijauskieny et al. in 2022 (Girdzijauskienÿ et al., 2022) analyzes the teaching and learning process in the context of applying digital technology in educational practices. The study includes indicators that measure the increase in student engagement, namely: cognitive, emotional, and behavioral engagement in the learning process. Another relevant study by Claire McGuinness and Crystal Fulton in 2019 (Mc Guinness & Fulton, 2019) which analyzes the teaching and learning process in the context of applying digital technology in educational practices. The study includes indicators that measure the increase in student engagement, namely: cognitive, emotional, and behavioral engagement in the learning process. Another relevant study by Claire McGuinness and Crystal Fulton in 2019

(Nikomo et al., 2021) focuses on student engagement in technology-based learning, such as social media and video. Based on the background provided above, the research question can be formulated as follows: How effective is the implementation of digital tools in enhancing student engagement in entrepreneurship courses?

## METHOD

This study uses a mix-method research under the design of quasi-experimental. Pre-test and post-test and survey for both the experimental and control groups are conducted to collect the data concerning with the students' engagement towards the implementation of digital tools in classroom process. This research involved 100 students from the Faculty of Economics and Business: Class A and Class C from the Management department and Class C from the Accounting department. That sample decided by random sampling method, which are chosen from students in two departments. The test and the surveys will be analyzed using descriptive statistics and regression analysis to examine the relationship between the use of digital tools and student engagement. Qualitative data from interviews will be analyzed thematically to identify key themes and patterns to figure out students' experiences and perceptions.

The pretest is given before the implementation of digital tools in classroom management begins, while the post-test is given after the implementation period. Apart from the pretest and post-test, the researcher also employs surveys to obtain data from students regarding their perceptions and experiences with the implementation of digital tools in classroom management. The survey includes questions about the effectiveness of digital tools, students' comfort in using them, and their impact on student engagement and participation in learning. The next step is to distribute the pretest and survey to students before the implementation of digital tools begins, providing clear instructions on how to fill them out correctly. The assessment indicators used in this research related to the use of digital tools in classroom management to measure the level of student engagement are as follows:

- Frequency of Participation: This includes the number of student interactions with digital tools during learning activities; Student activities in online discussions or collaborations using digital tools; The quantity of tasks completed or submitted through digital tools.
- Activeness and Initiative: This comprises the students' ability to initiate or contribute to learning activities using digital tools; The level of creativity displayed by students in using digital tools to convey ideas or complete tasks.

- Responsiveness to Feedback: This involves the students' ability to respond to feedback from teachers or fellow students through digital tools; Willingness of students to revise or improve their work or answers based on feedback received through digital tools.
- Collaboration and Interaction: This assesses the level of student participation in collaborative activities through digital tools; Students' ability to interact and cooperate with their peers using digital tools.
- Utilization of Additional Resources: This includes the extent to which students explore and utilize additional resources (such as instructional videos, online learning materials) through digital tools; The students' ability to access and benefit from additional learning materials provided via digital tools.
- Emotional Engagement: This measures the level of enthusiasm, interest, and involvement of students in learning supported by digital tools; The level of satisfaction and confidence that students have in using digital tools for learning.
- Independence in Learning: This evaluates the students' ability to be self-reliant in using digital tools as learning aids; The level of self-organization and self-management demonstrated by students in learning using digital tools.

The subsequent step is to implement the digital tools in classroom management according to the research plan. During this period, the researcher also observes and records student engagement in using digital tools. After the implementation period concludes, the researcher distributes the post-test and survey to the students, providing the same instructions as given for the pretest and initial survey.

The next step involves collecting data from the pretest, post-test, and survey completed by the students. Analyzing the data from the pretest and post-test helps measure the differences in students' understanding or engagement before and after the implementation of digital tools. Meanwhile, data from the survey provides deeper insights into students' perceptions of the effectiveness and influence of digital tools in classroom management. The next step is conducting interview aiming to figure out students’ perception towards the digital learning based. The same set of questions is given until repetitive answers are obtained. These repeated interviews provide an opportunity to gain more in-depth and consistent perspectives, thus reinforcing the results obtained from the treated data.

## RESULT

Table 1 is actually explained values in table 2, where if the value is 80, the meaning that respondent get maximum score. Likewise table 3, that explained values for table 4. Table 2 shows the result of pre-test the treatment meanwhile table 4 shows the result of post-test of checklist observations indicating that the experimental class using digital tools demonstrated an increase in average scores during the pre-test and post-test compared to the class that used traditional learning without digital tools. As a result, indicators such as Frequency of Participation; Activeness and Initiative; Responsiveness to Feedback; Collaboration and Interaction; Utilization of Additional Resources; Emotional Engagement; and Independence in Learning were not fulfilled in the class that did not use digital tools in their learning process.

**Table 1.** The result of post-test group control before treatment

| | | **The Control Group Post-Test** |
|---|---|---|
| N | Valid | 50 |
| | Missing | 0 |
| | Mean | 69.0000 |
| | Median | 70.0000 |
| | Mode | 70.00 |
| | Minimum | 60.00 |
| | Maximum | 80.00 |

Source: SPSS Data, 2023

**Table 2.** The control pre-test frequency of distribution

| **Range** | | **Frequency** |
|---|---|---|
| 60 – 63 | 59,5 - 63,5 | 8 |
| 64 – 67 | 63.5 – 66,5 | 0 |
| 68 – 71 | 66,5 – 69,5 | 0 |
| 72 -75 | 69,5 – 72,5 | 37 |
| 76 – 79 | 72,5 – 75,5 | 4 |
| 80-83 | 75,5 – 78,5 | 1 |
| | Total | 50 |

**Table 3.** The Result of Post-Test Group Control Before Treatment

| | | **The Control Group Post-Test** |
|---|---|---|
| N | Valid | 50 |
| | Missing | 0 |
| Mean | | 84.20000 |
| Median | | 85.0000 |
| Mode | | 90.00 |
| Minimum | | 70.00 |
| Maximum | | 90.00 |

Source: SPSS Data, 2023

**Table 4.** The Experiment of post-test Frequency of Distribution

| Range | | Frequency |
|---|---|---|
| 70 – 74 | 69,5 – 74,5 | 3 |
| 75 – 79 | 74,5 – 78,5 | 3 |
| 80 – 84 | 79,5 - 83,5 | 3 |
| 85 – 89 | 84,5 – 88,5 | 24 |
| 90 – 94 | 89,5 – 93,5 | 17 |
| **Total** | | **50** |

**T test Pre-Test and Post-Test Experiment Class**

The research also used t-tests (pre-test and post-test) in the experimental group to determine if there were any improvements in scores. The research findings were considered significant if t-calculation > t-table at a significance level of 5%, with a p-value less than 0.05. The summary of the t-test results for the pre-test and post-test in the experimental group is shown in Table 5.

**Table 5.** The summary of the t-test results for the pre-test and post-test

| Class | Mean | $t_{count}$ | $t_{table}$ | P |
|---|---|---|---|---|
| *Pre-test* experiment class | 69.00 | | | |
| *Post-test* experiment class | 84.00 | 23,241 | 2,000 | 0,001 |

Source: spss processed data, 2023

Based on Table 5, the average pre-test score in the experimental group is 69.00, and the average post-test score is 84.00, indicating an increase of 15.00 points. It is also found that the calculated t-value (t-calculation) is greater than the critical t-value (t-table) at a significance level of 5% (23.241 > 2.000), and the p-value is less than 0.05, which means that there is a significant improvement in the scores of the experimental group.

**The t-tests (pre-test and post-test) were conducted in the control group**

Next, the t-tests (pre-test and post-test) were conducted in the control group to determine if there were any improvements in scores. The research findings will be considered significant if the calculated t-value (t-calculation) is greater than the critical t-value (t-table) at a significance level of 5%, and the p-value is less than 0.05. The summary of the t-test results for the pre-test and post-test in the control group is shown in Table 6.

**Table 6.** The summary of the t-test results for the pre-test and post-test in the control group

| **Class** | **Mean** | **$t_{count}$** | **$t_{table}$** | **P** |
|---|---|---|---|---|
| *Pre-test* control group | 67.50 | | | |
| *Post-test* group control | 77.40 | 18,868 | 2,000 | 0,001 |

Based on Table 6, the average pre-test score in the control group is 67.50, and the average post-test score is 77.40, indicating an increase of 9.90 points. It is also found that the calculated t-value (t-calculation) is greater than the critical t-value (t-table) at a significance level of 5% (18.868 > 2.000), and the p-value is less than 0.05, which means that there is a significant improvement in the scores of the control group.

**T-test of Experimental Class Post-Test and Control Class Post-Test**

Next, an independent-sample t-test was conducted to compare the post-test scores between the experimental group and the control group. The purpose is to determine if there is a significant difference in the post-test scores between the two groups. The research findings will be considered significant if the calculated t-value (t-calculation) is greater than the critical t-value (t-table) at a significance level of 5%, and the p-value is less than 0.05. The summary of the independent-sample t-test results for the post-test scores in the experimental and control groups is shown in Table 5.

**Table 7.** The summary of the independent-sample t-test results for the post-test scores in the experimental and control groups

| Class | Mean | $t_{count}$ | $t_{table}$ | P |
|---|---|---|---|---|
| *Pre-test* control class | 84.20 | 5,665 | 1,660 | 0,001 |
| *Post-test* control class | 77.40 | | | |

Source: spss processed data, 2023

Summary of the t-test results shows that the experimental group achieved a post-test average score of 84.20, while the control group had an average score of 77.40. Thus, it can be concluded that the experimental group's average score is 6.80 higher than the control group's. The calculated t-value (5.665) is greater than the critical t-value (1.660) at a significance level of 5% ($p = 0.001 < 0.05$), indicating a significant difference in scores between the experimental and control groups. The results of the pre-test and post-test in the experimental group showed an improvement of 15.00 points, which was statistically significant, as the calculated t-value (23.241) was greater than the critical t-value (2.000) at a significance level of 5%. This indicates that the implementation of digital tools in classroom management had a significant positive impact on student engagement.

Similarly, in the control group, there was a statistically significant improvement in scores from pre-test to post-test, with an increase of 9.90 points. The calculated t-value (18.868) was greater than the critical t-value (2.000) at a significance level of 5%. The comparison of post-test scores between the experimental and control groups showed a significant difference. The

experimental group had a higher average score of 84.20 compared to the control group's average score of 77.40. The calculated t-value (5.665) was greater than the critical t-value (1.660) at a significance level of 5%.

The findings indicate that the implementation of digital tools in classroom management positively impacted student engagement in both the experimental and control groups. However, the experimental group, which received the intervention of digital tools, demonstrated higher engagement compared to the control group, which did not receive the intervention. The research findings suggest that the use of digital tools in classroom management can enhance student engagement in learning. This approach can be considered an effective alternative to improve the quality of teaching and student participation in the learning process. However, it is essential to carefully consider the implementation and appropriate use of digital tools to sustain this positive impact and provide optimal benefits to the learning process.

## DISSCUSSION

This section consist of two parts. The firs part explain the result of Students' Engagement in using digital tools as the treatment in classroom management. The second part explain about the Students' Perception of using the digital tools in calssroom management. The analysis in this research uses theory of Frederick, based on the previous research that related to this research.

### Students' Engagement

When analyzing student engagement in the learning process, Fredericks suggests three elements to consider: behavioral, cognitive, and emotional. The behavioral dimension refers to students' level of participation in digital-based learning, including effort and persistence. The cognitive dimension is concerned with students' understanding of technology-based learning. Students' emotional reactions during the learning process are included in the emotional dimension. Student engagement is an important part of the learning process that determines learning outcomes and academic performance. Student engagement refers to students' involvement and active participation in learning activities. It includes students' interaction with course materials, involvement in class discussions, cooperation with classmates, and use of supplementary resources to aid in the learning process.

**Students' Perception**

The results of the interview showed that the use of digital tools greatly benefits students in the learning process. Students expressed that they can easily access learning materials, assignments, and additional resources through online learning platforms, leading to better organization and understanding of the learning process. Moreover, students mentioned that digital tools help them in understanding learning concepts, as they can access visual and clear video explanations and additional learning resources such as articles, simulations, and interactive quizzes. Additionally, students appreciated the feedback received through digital tools, finding it helpful in understanding their mistakes and improving the quality of their work. The feedback provided motivation and encouragement for continuous improvement and achieving better results. The data can be seen by the following interview excerpts:

> "I find the use of digital tools very helpful in my learning. I can easily access learning materials, assignments, and additional resources through online learning platforms. It makes me more organized and able to keep up with the progress of my learning (Respondent A, 2023.).

The use of digital tools also helps students in understanding learning concepts and easily accessing additional learning resources. As evidenced by the following quote.

> "The digital tools help me understand learning concepts better and provide easy access to additional learning resources. With digital tools, I can watch instructional videos that explain concepts in a more visual and clear manner. I can also access supplementary materials such as articles, simulations, and interactive quizzes. This enhances my understanding of the learning material (Respondent C, 2023.).

Regarding the outcomes and feedback obtained through the use of digital tools in classroom learning, it was found that students are proactive in responding to the feedback provided. This is evident from the following interview quotes:

> "I highly appreciate the feedback given through digital tools. Teachers can provide specific comments on the assignments I submit and offer suggestions for improvement. I feel more supported because this feedback helps me understand my mistakes and improve the quality of my work (Respondent E, n.d.).
> "I am happy with the feedback provided through digital tools as I can track my progress over time. I can see my scores and rankings in quizzes or online tests. This motivates me to continuously improve and achieve better results (Respondent F, 2023).

In conclusion, the implementation of digital tools in classroom management has shown positive outcomes in student engagement and learning. The integration of digital tools has provided students with better access to learning materials, interactive resources, and valuable feedback, ultimately enhancing their learning experience and academic performance.

## CONCLUSION

The test results show that the average score of the experimental groups is higher 84.20 than the control groups' 77.40, and the t-value (5.665) is bigger than the critical t-value (1.660) at a significance level of 5%. The findings from the observations and interviews demonstrate that students have good opinions toward the use of digital tools in education. The results show that using digital technologies in classroom management improved student involvement in both the experimental and control groups. However, as compared to the control group, the experimental group that got the intervention of digital tools displayed greater engagement. The findings of this research will provide insights into the implementation of digital tools in classroom management and its influence on student engagement and learning outcomes in Merauke Musamus University. The implications of the findings will be discussed, including recommendations for educators to optimize the integration of digital tools for effective classroom management. This research contributes to the body of knowledge on the use of digital tools in higher education settings.

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