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Utilization of the Artificial Intelligence-Based Teachy Application to Improve the Efficiency of Junior High School Teachers' Administrative Tasks

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Abstract

This study aims to analyze the increase in the efficiency of teachers' administrative tasks before and after using the artificial intelligence (AI)-based Teachy application at SMP Negeri 1 Poli-Polia. The main problem underlying this study is the high burden of teachers' administrative learning, which results in limited time for developing innovative and student-centered learning. This study uses a quantitative approach with a quasi-experimental design through a one-group pretest–posttest model. The research subjects involved all 18 teachers at SMP Negeri 1 Poli-Polia, with a sampling technique using total sampling. Data were collected through a questionnaire on the efficiency of teachers' administrative tasks and learning device documentation, then analyzed using the N-gain test, paired t-test, and Wilcoxon test. The results showed that there was an increase in the efficiency of teachers' administrative tasks in the moderate category after using the Teachy application. In addition, there was a significant difference between the efficiency of teachers' administrative tasks before and after using the Teachy application, and the use of the Teachy application was proven to have a significant effect on the efficiency of teachers' administrative tasks. These findings indicate that the use of the AI-based Teachy application can be an effective solution in reducing the administrative burden on teachers and supporting improvements in the quality of learning management in junior high schools.

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1. INTRODUCTION

The development of 21st-century education demands a transformation in learning practices and educational management that are more relevant, holistic, and oriented towards developing students' potential. Education is no longer understood solely as a process of knowledge transfer, but as an effort to liberate humans through the development of critical thinking skills, creativity, collaboration, and technological literacy. This view is in line with the thinking of Ki Hajar Dewantara, who positions teachers as guides in the educational process, not merely imparters of knowledge, with the principles of Ing Ngarsa Sung Tuladha, Ing Madya Mangun Karsa, and Tut Wuri Handayani (Wiryopranoto, 2017). In this context, teachers are required to have a strategic role in creating meaningful and student-centered learning.

However, the reality on the ground shows that teachers still face a relatively high learning administration burden. Administrative tasks such as developing teaching modules, planning lessons, assessments, reporting, and documentation often consume a significant

portion of teachers' time and energy. In fact, learning administration is a supporting instrument aimed at ensuring the systematic and directed implementation of the learning process (Law Number 20 of 2003). Ineffectively managed educational administration has the potential to degrade the quality of educational services because it involves numerous recording, archiving, and service processes that require accuracy and efficiency from all school elements (Bahtiar, Afifah, & Faisal, 2023). When the administrative burden is not managed efficiently, this condition has the potential to reduce teachers' space to innovate in learning and optimally support students.

The implementation of the Independent Curriculum provides teachers with flexibility in designing learning according to student characteristics and the context of the educational unit. However, this flexibility has not been fully matched by a simplification of learning administration. Teachers are still required to prepare various complex planning and evaluation documents, often shifting their work orientation from strengthening the pedagogical process to meeting administrative demands. This situation underscores the need for strategies that can maintain the quality of learning administration while increasing its efficiency.

The development of digital technology, particularly artificial intelligence (AI), opens up new opportunities to address these issues. The concept of AI was first introduced through the Turing Test, proposed by Alan Turing as a basis for thinking about machine intelligence that resembles human intelligence (Turing, 1950). Over time, AI has progressed rapidly with increasing computing power, the availability of big data, and the development of increasingly complex algorithms. AI is now utilized in various fields, including education, in both aspects of learning and educational management and administration.

The use of AI in education is considered capable of automating routine tasks, increasing work efficiency, and assisting educators in data-driven decision-making. The Organisation for Economic Cooperation and Development (OECD) reports that generative AI has the potential to shift teachers' workload from routine administrative tasks to more pedagogically valuable activities, such as lesson planning and student mentoring (OECD, 2023). Therefore, AI is not intended to replace the role of teachers, but rather serves as a tool to support teacher professionalism.

Several previous studies have shown that the application of AI in education has a positive impact on administrative efficiency and teacher performance. Deep et al. (2024) found that AI can automate administrative tasks, improve educational data management, and create a more responsive educational environment. Research by Aprilia et al. (2024) showed that the use of AI effectively helps teachers develop teaching materials more creatively and efficiently. Similar findings were also reported by Kaswar et al. (2024) and Hutami (2024), who confirmed that the integration of AI in educational administration can improve operational efficiency and the quality of school performance.

However, most of this research still focuses on the use of AI in general or on specific platforms other than Teachy. Furthermore, studies specifically examining the use of AI applications to improve the efficiency of teachers' administrative tasks in junior high schools, particularly in rural areas, are still relatively limited. Research by Sangheethaa and Korath (2024) and Rahardian et al. (2024) also emphasizes that the effectiveness of AI is highly dependent on the context of use and teachers' readiness to adopt the technology.

One AI-based application designed to assist teachers in preparing learning administration is Teachy. This application provides various features for developing lesson plans, teaching materials, assessments, and other supporting documents more quickly and in a structured manner. Using Teachy is expected to help teachers optimize time and resources in completing learning administration tasks, allowing them to focus more on improving the quality of learning. However, the effectiveness of using the Teachy

application in improving the efficiency of teachers' administrative tasks needs to be empirically proven through research.

Based on the description, there is an important research gap to be studied, namely, the effect of the use of the artificial intelligence-based Teachy application on the efficiency of implementing teachers' learning administration tasks. The novelty of this research lies in the focus of the study on the use of the Teachy application as a tool for teacher learning administration, with efficiency indicators that include productivity, effort, time, resource utilization, and quality of administrative results. Therefore, the purpose of this study is to analyze the effect of the use of the Teachy application on the efficiency of implementing teachers' administrative tasks at SMP Negeri 1 Poli-Polia, with the formulation of the problem: how does the use of the Teachy application affect the efficiency of implementing teachers' administrative tasks at SMP Negeri 1 Poli-Polia?

2. RESEARCH METHODS

This study used a quantitative approach with a quasi-experimental design to analyze the effect of the use of the Teachy application on the efficiency of teachers' administrative tasks. The quantitative approach was chosen because this study focused on measuring changes in efficiency expressed in numerical data and analyzed using statistical techniques. The quasi-experimental design was used because random subject assignment was not possible, so the study was conducted on existing groups within the formal education context.

The research design used was a one-group pretest–posttest design. This design involved one group of subjects whose administrative task efficiency was measured before treatment (pretest) and after treatment (posttest). The treatment in this study was the application of the Teachy application in completing teachers' learning administrative tasks. A comparison of the pretest and posttest results was used to determine improvements, differences, and the effect of using the Teachy application on teachers' administrative task efficiency. The flow of this research is presented in Figure 1.

The study was conducted at SMP Negeri 1 Poli-Polia, East Kolaka Regency, from October to December 2025. The study population was all 18 teachers of SMP Negeri 1 Poli-Polia. The sampling technique used was total sampling, so that the entire population was used as research subjects. The independent variable in this study was the use of the Teachy application in completing teachers' learning administration tasks, while the dependent variable was the efficiency of implementing teachers' administrative tasks. The relationship between variables and efficiency measurement indicators is presented in Table 1.

Data collection was conducted using non-test methods, namely questionnaires and documentation. The main research instrument was a questionnaire on teacher administrative task efficiency, compiled based on indicators of productivity, effort, time, resource utilization, and quality of administrative output. The questionnaire used a five-level assessment scale and underwent validity and reliability testing before being used in the study. Furthermore, documentation techniques were used to collect supporting data in the form of teacher learning administration tools, such as teaching modules, annual programs, semester programs, and assessment documents.

Data analysis was conducted through several stages. The improvement in the efficiency of teachers' administrative tasks was analyzed using the normalized gain (N-gain) test. Furthermore, a data normality test was conducted to determine the analysis of differences technique used. Differences in the efficiency of teachers' administrative tasks before and after using the Teachy application were analyzed using a paired sample t-test. To test the effect of using the Teachy application on the efficiency of teachers'

administrative tasks, the Wilcoxon test was used. All data analysis was conducted using SPSS version 22 software at a significance level of 0.05.

Table 1. Research Variables and Indicators

Variables	Productivity	Business	Time	Utilization of Resources	Quality of Results
Efficiency of Teacher Administrative Tasks	✓	✓	✓	✓	✓

Figure 1. One Group Pretest–Posttest Design Research Flow

3. RESULTS AND DISCUSSION

3.1.Research Results

This research was conducted at Poli-Polia 1 Junior High School from October to December 2025, involving all teachers as respondents. Initially, teachers' administrative task completion efficiency was measured before the use of the Teachy application. Initial measurement results indicated that teachers' work efficiency was in the sufficient category, but not yet optimal. The total teacher efficiency score ranged from 82 to 101, with relatively high variation between individual outcomes. This condition indicates that before the technology intervention, the completion of learning administration was still highly dependent on individual teacher effort.

Based on efficiency indicators, teacher effort scores are relatively high, indicating that completing learning administration requires significant effort and concentration. Time indicators are at a moderate to high level, reflecting the lengthy process of preparing learning administration. Resource utilization scores are moderate, indicating that devices and support systems are not being utilized optimally. Meanwhile, the quality of administrative results is quite good, but inconsistent across respondents, indicating limitations in the administrative work system used before the application was implemented.

After implementing the Teachy app, teachers' overall efficiency in completing administrative tasks increased. Teachers' total efficiency scores increased, ranging from 92 to 134. Nearly all teachers showed improved scores on every efficiency indicator compared to their baseline. This improvement reflects a shift in teachers' administrative work patterns from a manual system to a more structured, digital-based system.

Efficiency improvements are evident in the productivity indicator, indicating that teachers are able to systematically complete more components of learning administration. The effort indicator also increased numerically, but this increase indicates that teachers' efforts are becoming more focused and productive, not more demanding. Time efficiency has significantly improved, reflecting the acceleration of the learning administration process through automation and integration features within

the Teachy app. Resource utilization has consistently increased, indicating that teachers are beginning to use the app as their primary tool for completing administrative tasks. Furthermore, the quality of administrative output has become more consistent and organized, indicating a reduction in errors and an increase in document completeness.

The improvement in efficiency of teachers' administrative tasks was analyzed using normalized gain values. The analysis showed an average increase in efficiency of 0.356, which is in the moderate category. Some teachers showed improvement in the moderate to high category, while others showed improvement in the low category. Nevertheless, overall, these results indicate that the use of the Teachy application has positively contributed to improving teachers' work efficiency in completing administrative tasks.

To determine the difference in efficiency in completing teachers' administrative tasks before and after using the Teachy application, inferential statistical tests were conducted. Before hypothesis testing, the difference in efficiency scores was tested for normality using the Kolmogorov–Smirnov test. The results indicated that the data were normally distributed, allowing for further testing of differences using a paired t-test.

The results of the paired t-test showed a significant difference between the efficiency of teachers' administrative task completion before and after using the Teachy application. The significance value obtained was below the 0.05 significance limit, indicating a statistically significant difference in average efficiency. The average teacher efficiency score increased from 92.88 before using the application to 108 after using the Teachy application, indicating a significant increase in teacher administrative work efficiency.

Furthermore, the effect of using the Teachy application on the efficiency of teachers' administrative task completion was also tested using the Wilcoxon test. The test results showed that all teachers experienced an increase in efficiency scores after using the Teachy application, without a decrease in scores for any respondents. The significance value of the Wilcoxon test results was below 0.05, indicating that the use of the Teachy application significantly influenced the efficiency of teachers' administrative task completion at SMP Negeri 1 Poli-Polia.

3.2.Discussion

The results of the study indicate that the use of the Teachy application can improve the efficiency of teachers' administrative tasks at SMP Negeri 1 Poli-Polia. This increase in efficiency is categorized as moderate based on the normalized gain value, but statistically shows a significant difference between conditions before and after application use. This finding confirms that the use of digital technology plays a significant role in improving the teacher's administrative work system, which was previously manual and repetitive.

Before using the Teachy app, teacher work efficiency was achieved through relatively significant effort. Teachers had to allocate significant time and energy to developing learning materials, managing classroom administration, and compiling academic reports. This situation indicates that the administrative burden has the potential to reduce teachers' focus on pedagogical activities. After implementing the Teachy app, teachers' efforts became more focused and productive because most administrative processes were simplified through the automation features and templates available within the app. This finding aligns with research by Mambu et al. (2023), which states that the use of artificial intelligence in educational administration can help teachers manage administrative tasks more effectively and efficiently.

In terms of time efficiency, the study results showed a significant acceleration in completing teachers' administrative tasks after using the Teachy application. Processes

that previously required considerable time could be completed more quickly because the digital system enabled automated data processing, document preparation, and grade recapitulation. These results support the findings of Hermawan et al. (2025), who concluded that the application of AI-based technology has proven effective in optimizing the allocation of educational resources, particularly in increasing the efficiency of educators' work time.

Resource utilization has also consistently increased since the use of the Teachy app. Teachers no longer rely entirely on printed documents and manual processes, but instead begin utilizing digital devices as the primary resource for managing learning administration. This administrative digitization has resulted in reduced paper, ink, and other operational costs. This finding aligns with research by Rochmawati (2023), which states that AI-based educational administration systems are capable of integrating academic and non-academic data management more efficiently and accurately.

In terms of output quality, the use of the Teachy application has been shown to improve the neatness, consistency, and completeness of learning administration documents. The standardized format available in the application helps teachers develop learning materials according to curriculum requirements while minimizing data input errors. This improved output quality supports Rosita's (2024) findings, which state that training and mentoring in the use of AI technology can improve the efficiency and quality of teachers' reports and learning instruments.

The results of the inferential statistical tests support the descriptive findings of this study. A paired t-test showed a significant difference between teachers' administrative task completion efficiency before and after using the Teachy app. Furthermore, the Wilcoxon test results showed that all respondents experienced an increase in efficiency scores, with no decrease for any teacher. These findings indicate that the implementation of the Teachy app has a consistent and comprehensive impact on teacher work efficiency.

In addition to increased efficiency, teacher responses to the use of the Teachy app have also shown a positive trend. Teachers rate the app as easy to learn, user-friendly, engaging, and useful in supporting learning administration. This positive response is a crucial factor in the success of technology implementation in schools, as user acceptance is a key prerequisite for the long-term sustainability of digital systems (Mambu et al., 2023).

However, the implementation of AI-based technology in educational administration is not without challenges. Data security and information privacy are key concerns, given that applications manage sensitive data such as student identities and learning outcomes. Furthermore, the readiness of the technological infrastructure and teachers' digital literacy are crucial factors for successful implementation. Therefore, robust data protection policies and ongoing training programs are necessary to ensure optimal and sustainable impact from the use of digital applications (Hermawan et al., 2025).

Overall, the results of this study confirm that the use of the Teachy app significantly improves the efficiency of teachers' administrative tasks. This increased efficiency is reflected in aspects of productivity, effort, time, resource utilization, and the quality of administrative output. By reducing the administrative burden, teachers have greater opportunities to focus their time and energy on core learning activities and professional development. These findings strengthen the position of AI-based digital applications as strategic partners for teachers in creating a more effective educational work system that is oriented towards quality learning.

4. CONCLUSION

This study aims to analyze the improvements, differences, and impact of the use of the Teachy application on the efficiency of completing teacher administrative tasks at SMP Negeri 1 Poli-Polia. Based on the results of the data analysis, it can be concluded that the use of the Teachy application has a significant positive impact on teacher work efficiency in completing learning administration.

The results of the study indicate that teachers' administrative task completion efficiency before using the Teachy app was adequate, but not optimal. The administrative process was still dominated by a manual system that required significant effort and time. After implementing the Teachy app, efficiency increased, falling into the moderate category based on normalized gain values. This improvement reflects a shift in the teacher administrative work system to become more structured, systematic, and technology-based.

Inferential statistical tests showed a significant difference between teachers' administrative task completion efficiency before and after using the Teachy app. Furthermore, the test results also demonstrated that the use of the Teachy app significantly impacted teachers' administrative task completion efficiency. All respondents experienced an increase in efficiency scores without a decrease, confirming that the Teachy app provides a consistent and comprehensive impact.

Based on efficiency indicators, the use of the Teachy app can increase teacher productivity, direct work efforts more effectively, accelerate administrative completion times, optimize resource utilization, and improve the quality of learning outcomes. By reducing the administrative burden, teachers have a greater opportunity to focus on core learning activities, professional development, and classroom learning innovation.

This research makes important contributions both theoretically and practically. Theoretically, the results reinforce previous findings regarding the role of technology and artificial intelligence in improving educators' work efficiency, particularly in the aspect of learning administration, which has received little attention. Practically, this research provides a clear picture that the Teachy application can be an alternative solution for schools in managing learning administration more efficiently, particularly in areas with limited resources.

Based on the findings of this study, it is recommended that schools encourage the wider use of digital applications such as Teachy as part of a strategy to improve teacher performance. Furthermore, ongoing training and mentoring are needed to improve teachers' digital literacy so that technology utilization can be optimal. Future research is recommended to involve a broader sample size, employ a more robust experimental design, and examine the impact of similar applications on other aspects, such as learning quality and student learning outcomes.

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