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Original Article

Android-Based Media Innovation to Improve Vocational Students' Task Performance and Self-Regulated Learning

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Abstract

The development of 21st-century digital technology calls for a transformation of learning media in vocational high schools to address students' low levels of self-regulated learning and task performance in meeting administration practical training. This study aims to develop an Android-based learning medium called "Smart Meeting Admin" to improve task performance and self-regulated learning among vocational high school students majoring in Office Management and Business Services. The research method used is Research and Development (R&D) employing the ADDIE development model. Data were collected through expert validation sheets, student response questionnaires, and measurement instruments for task performance and self-regulated learning, analyzed descriptively and quantitatively. The results indicate that the "Smart Meeting Admin" platform is deemed highly suitable for use based on evaluations by subject matter experts and media experts. Additionally, there was a significant improvement in students' self-regulated learning abilities and task performance scores after utilizing this application in the learning process. The implications of this study suggest that the integration of mobile-based learning media can serve as an effective innovative solution to foster independent learning while optimizing students' practical skills in the digital age.

Keywords: Android, Learning Media, Mobile Learning, Self-Regulated Learning, Task Performance.

1. Introduction

The development of digital technology in the 21st century has fundamentally transformed the educational paradigm, demanding a shift in learning activities from conventional methods toward the use of digital platforms that are more dynamic and easily accessible to Generation Z, who are digital natives (Churiyah et al., 2021). In the context of vocational high school (SMK) education, particularly in the Office Management and Business Services (MPLB) program, the integration of information technology is no longer merely an add-on but a crucial necessity to equip students with practical skills relevant to the modern, fully digital workplace ecosystem (Hazar & Firdaus, 2025). This aligns with the demands of the independent curriculum, which requires students to possess self-management skills in learning, or Self-Regulated Learning (SRL) (Teng, 2024), so that they can become lifelong learners who are adaptive to rapid global changes (Fallianda et al., 2026). Therefore, educational institutions need to align their learning strategies by providing tools that can facilitate the need for independent work simulations (Ridwan et al., 2025).

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However, the situation on the ground reveals a significant gap between expected competencies and the availability of supporting facilities, as the learning resources currently available in Class XI-MPLB 3 at SMKN 1 Malang remain limited and are not yet capable of integrating all elements of meeting administration into a practical and integrated digital ecosystem. Students often face technical and cognitive challenges in accurately producing various meeting administrative documents (such as agendas, invitations, and minutes) within limited time frames, which ultimately results in low task performance. Referring to Nurnaeni's (2017) framework, task performance is defined as an individual's effectiveness in carrying out activities that contribute to the organization's core technical operations, either directly by executing these technical processes or indirectly by providing the necessary materials or services. Low performance is evident in the students' inability to meet quality indicators for work output and the timely completion of administrative tasks. The high cognitive load of switching between manual formats leads to numerous errors in document details, which systematically lower competency achievement scores in office simulations.

In addition, the limited ratio of computers to students in school computer labs often hinders the effectiveness of independent practice, necessitating more flexible alternatives that do not rely entirely on school desktop facilities (Churiyah et al., 2023). This high dependence on laboratory facilities has a direct impact on low student SRL indicators, particularly regarding the organization of the learning environment and time management (van Alten et al., 2020). As explained by Brenner(2022) SRL is an active process in which individuals participate metacognitively, motivationally, and behaviorally in their own learning process, encompassing key indicators such as goal setting, environmental structuring, time management, and self-monitoring. Without the support of flexible media, students demonstrate limited initiative to practice independently outside of school hours, thereby hindering the process of self-monitoring their skill progress.

Given the current urgency, this research is crucial to conduct because the lack of a comprehensive meeting administration simulation tool risks hindering students mental and technical readiness to face a workplace that demands speed and high accuracy. While some researchers have focused on tools containing only static materials (PDF/PPT), this application offers document automation, a feature not previously explored in prior research. The novelty of this research lies in the integration of a comprehensive meeting administration system into a single mobile platform, where document automation features and AI-based (speech-to-text) minute synchronization serve as key differentiators compared to typical Android learning platforms, which tend to focus solely on delivering static content. Beyond evaluating product feasibility, this study theoretically proposes that digital self-regulated learning acts as a primary determinant of vocational students' task performance rather than a mere secondary outcome of media intervention. Therefore, this study aims to develop an innovative learning tool in the form of an Android-based "Smart Meeting Admin" application designed specifically for 11th-grade MPLB 3 students at SMKN 1 Malang. The application is designed as an integrated platform capable of synchronizing administrative data, ranging from agenda preparation, automatic invitation letter generation, digital attendance lists, and meeting budget calculations, to the use of artificial intelligence (AI speech-to-text) for instant synchronization of meeting minutes. The objective of this research is that through the implementation of this tool, it is expected to provide a more concrete learning experience that aligns with professional secretarial standards, while significantly addressing the challenges of time and labor efficiency in completing administrative tasks, and simultaneously fostering the character of 11th-grade MPLB 3 students as individuals with a strong capacity for self-regulated learning.

2. Literature Review

2.1. Android-Based Learning Media

Android-based learning media are classified as mobile learning (m-learning), which provides flexible access to materials without the constraints of time and place (Irfandi et al., 2024). A key characteristic of m-learning is its ability to create a student-centered learning ecosystem, where interaction is not limited to text but also includes functional simulations (Dharma et al., 2021). The use of mobile devices in vocational education enables interactive simulations that mimic real-world work conditions, thereby bridging the gap between classroom theory and industrial practice. These results support the findings of Churiyah et al. (2021) that mobile media provide learning flexibility.

2.2. Task Performance in Office Administration

Task performance encompasses an individual's effectiveness and contribution in carrying out the technical tasks that constitute their primary responsibilities in accordance with organizational standards (Kundi et al., 2023). In the context of office administration, specific task performance indicators are measured through the quality of document output, timeliness of completion, and technical proficiency in operating office support software (Nurnaeni, 2017). The ability of vocational high school students to produce accurate meeting documents reflects their professional readiness. The digitization of administrative workflows through specialized applications can reduce manual workloads, minimize the potential for human error, and systematically improve productivity in performing routine, repetitive tasks (Halimah et al., 2024).

2.3. Self-regulated learning (SRL)

Self-regulated learning (SRL) refers to students metacognitive, motivational, and behavioral abilities to actively plan, monitor, and evaluate their own learning progress. There are four key indicators in the SRL framework: goal setting, creating a conducive learning environment, efficient time management, and self-assessment of competency achievement (Brenner, 2022). In the digital age, SRL has become a crucial competency to ensure students can continue learning independently outside of direct teacher supervision. The integration of smart features such as Artificial Intelligence (AI) into learning materials has been shown to stimulate students' metacognitive awareness, assist them in decision-making when solving complex problems, and enhance their sense of responsibility for their own learning outcomes (Lan, 2025).

2.4. Previous Research

Research by Siregar et al. (2021) focused on the development of an Android-based learning application for vocational school students using the ADDIE development model. The results of this study indicate that Android-based learning media has very high validity and is capable of significantly improving students' motivation and cognitive learning outcomes. However, this study remains general in scope, focusing on basic theory, and has not yet addressed the specific task performance aspects (practical task performance) related to meeting administration competencies. Additionally, the study conducted by Lastri et al. (2024) analyzed the impact of learning media utilization on the quality of the learning process within the Office Administration program. The results of this quantitative study concluded that there is a significant positive influence of media use on learning quality. Nevertheless, the learning media examined in that research were still dominated by print media (handouts) and conventional electronic media (presentation slides), thus failing to adopt the flexibility of adaptive mobile technology to promote interactive self-directed learning. In the context of

optimizing self-directed learning, research by Salinas-cerda (2022) examined the implementation of smartphone apps (such as the 4Planning app) in fostering self-regulated learning (SRL) and academic performance among college students. The findings of this research indicate that the integration of task reminder and study planner features in mobile apps is effective in improving students' SRL scores and academic self-efficacy. However, the study focused on higher education students in virtual learning settings; consequently, there are differences in instructional needs compared to vocational high school students, who require a structured work guide (performance support system) to conduct practical protocol task simulations.

3. Methods

This study is a development research, which is a research method used to produce a specific product and test its effectiveness. This study employs the ADDIE development model. The selection of this model is based on its systematic structure for producing valid, practical, and effective instructional media (Hazar & Firdaus, 2025). The development procedure is carried out through five stages, namely: 1) analysis: this stage involves analyzing curriculum needs and identifying the characteristics of students who require practical Android-based media due to limited computer lab facilities; 2) design: designing the user interface (UI/UX) and the application's database structure, which integrates features such as automatic invitation letter generation, digital attendance tracking, and meeting budget calculation; 3) development: coding the application using an Android-based framework, followed by validation by media experts and subject matter experts to ensure the product's feasibility before testing, 4) implementation: testing the use of the Smart Meeting Admin application by students in a simulated meeting management scenario in the classroom to measure its practicality, 5) evaluation: analyzing the application's effectiveness in enhancing students' skills through a comparison of learning outcomes and an analysis of user satisfaction.

The research subjects were 34 students in Class XI-MPLB 3 at SMKN 1 Malang in the meeting management course. The data collected in this study consisted of quantitative data obtained from expert validation scores, student response questionnaire scores, and learning outcome scores. qualitative data in the form of critiques, suggestions, and feedback from experts and student responses during the pilot testing process. The data collection instruments used included (a) a validation questionnaire for media and material experts; (b) a student response questionnaire to measure practicality; (c) a performance test to measure accuracy and time efficiency in creating meeting administrative documents; and (d) a 1–5 Likert scale questionnaire to measure Self-Regulated Learning.

To determine the quality of media products, the research results will be measured, tested, and evaluated using the following criteria. Product validity is measured using quantitative and qualitative data from validation questionnaires completed by media experts and subject matter experts. Data analysis based on scores from the Likert scale questionnaire will be calculated as a percentage using the average or acceptability percentage formula. The product is deemed valid and suitable for use if the validity percentage from the experts meets the minimum criteria of "Valid" or "Very Valid." Qualitative critiques and suggestions from the experts are used as the basis for product revisions before implementation. The practicality of the application is measured based on response questionnaires from 34 students in class XI-MPLB 3 following a classroom simulation of the application's use. Data analysis was conducted using quantitative data from student response questionnaire scores to calculate the average practicality percentage. Qualitative data in the form of students' direct responses

during the trial were also recorded. The application was deemed practical if the student response survey results indicated a positive category (practical/very practical), signifying that the user interface (UI/UX) was easy to understand and the application successfully addressed the limitations of the computer lab. The effectiveness of the app was assessed using two main indicators: learning outcomes (cognitive/psychomotor) and self-regulated learning. To measure improvements in students' meeting management skills, a comparison was made between pre-test and post-test scores following the use of the application. Performance evaluation was conducted specifically with regard to the accuracy of administrative documents and the time efficiency of document creation using the application. Improvements or levels of student learning autonomy were measured using data from a 1–5 Likert scale questionnaire. Data analysis based on total questionnaire scores was accumulated and categorized into levels of autonomy (Very High, High, Moderate, Low, Very Low). The application was deemed psychologically effective if it was able to encourage students to achieve a high category of learning autonomy.

4. Results and Discussion

4.1. Research Results

4.1.1. Validity of Instructional Media

Before field testing, the Android-based learning media first underwent a validation process by experts to ensure the suitability of its content and instructional design. This validation process involved media experts and subject matter experts to provide objective assessments and suggestions for improvements to the developed media prototype.

The suitability of the Smart Meeting Admin application was tested using expert validator results, which were then analyzed using descriptive percentages. Table 1 below shows the results of the subject matter expert validation by an Office Management teacher in class XI MPLB 3:

Table 1. Results of the Subject Matter Expert Validation

Aspect	Percentage (%)	Criterion
Content Suitability	98%	Highly Suitable
Contextual Assessment	100%	Highly Suitable
Language Suitability	95%	Highly Suitable
Average	98%	Highly Suitable

The validation results by subject matter experts as in table 1 showed a highly significant percentage, namely 98%. The material in the Smart Meeting Admin application is classified as "highly suitable" for use in the Office Management course, specifically in the Meeting Management module. This high percentage proves that the scope of the material presented is accurate, systematic, and relevant to the expected learning outcomes.

Table 2 below shows the results of the validation by media experts in the field of instructional design from the Faculty of Economics and Business, State University of Malang:

Table 2. Results of Media Expert Validation

Aspect	Percentage (%)	Criterion
Graphic Suitability	90%	Highly Suitable
Media Quality	93%	Highly Suitable
Media Layout	87%	Highly Suitable
Average	90%	Highly Suitable

According to the assessment by media experts, a validity percentage of 90% was obtained. This figure indicates that the aspects of interface design, visual quality, ease of navigation, and technical functionality of the media fall into the "Highly Valid" category. Media experts assessed that the use of multimedia elements and the application layout are proportional and aligned with the characteristics of mobile devices, thereby minimizing the cognitive load on users. With the very high cumulative ratings from both experts, this educational media is deemed highly suitable for implementation in classroom learning processes.

After undergoing validation by the experts and being deemed suitable, the learning media was then pilot-tested with a small group. This pilot test was conducted with 6 11th-grade MPLB students to assess readability and students' initial understanding of the products use before implementing it in a broader classroom setting. The research results from the small-group pilot test are presented in Table 3 below:

Table 3. Results of User Testing Validation

Aspect	Percentage (%)	Criterion
Usability	87.50%	Very Acceptable
Usefulness	91.11%	Very Acceptable
Attractiveness	88.89%	Very Acceptable
Average	89%	Very Acceptable

Based on the results of the distributed assessment, an average score of 89% was obtained. These results indicate that the learning material received a very positive response from students in the initial stage. This score confirms that the product is ready to proceed to the next stage.

4.1.2. Smart Meeting Admin Application

This research and development project resulted in the Smart Meeting Admin application, an Android-based learning tool for the "Meeting Management" component of the Office Management course for 11th-grade MPLB 3 students. The developed tool can be accessed online via a smartphone browser without needing to be downloaded, through the link https://bit.ly/smartmeetingadminapp . The application includes features designed to enhance students' task performance and self-regulated learning. The application displays an admin login page and a main dashboard that users can access, as shown in Figure 1 below.

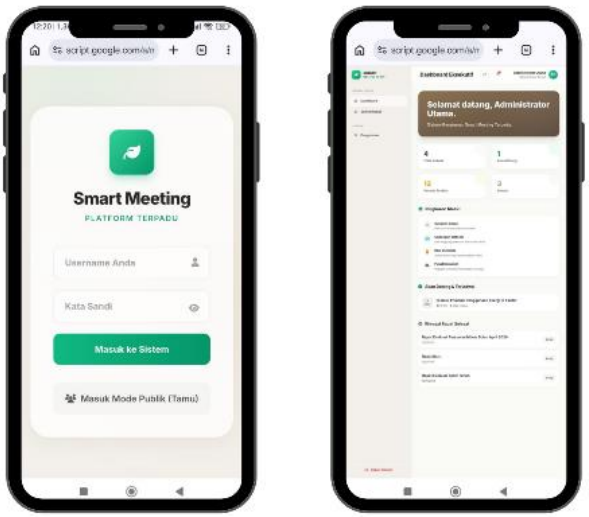

Figure 1. Home Screen

Figure 2 shows the initial screen that appears when a user accesses the Smart Meeting Admin application to help them find information. This initial screen requires students to log in as a user so they can assume the role of a secretary or administrative staff member who operates the company's meeting management application. The dashboard features a systematically integrated Meeting Schedule menu, which includes: 1) Meeting Info, 2) Agenda, 3) Invitations, 4) Attendance List, 5) Budget Estimate, 6) AI Minutes, and 7) Document Center. These menus contain meeting administrative tasks that must be entered by students acting as administrators, as shown in Figure 2 below:

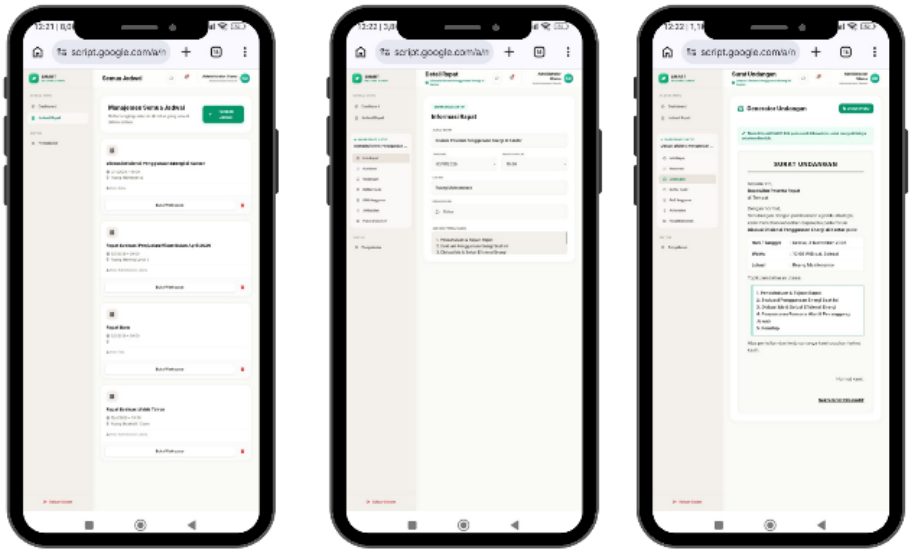

Figure 2. Meeting Schedule Menu

From a pedagogical perspective, the modules are designed using an Authentic Learning approach through role-play, in which students' take on the role of professional secretaries or administrators within the digital ecosystem of a simulated company. This transition from manual to digital administration allows students to experience situated learning that is relevant to current industry needs. This application includes meeting schedule planning; when inputted, it immediately displays the next steps for meeting administration, such as creating the meeting agenda, program, and attendance list where students simply need to enter the data and the results can be downloaded followed by meeting invitation letters requiring minor adjustments to hone their attention to detail, meeting cost estimates with automatic calculations, uploading files for meeting materials, and meeting minutes. This application aims to improve students' meeting management and administrative efficiency while fostering self-regulated learning

4.1.3. The Practicality of Educational Media

Based on the results of a field trial conducted with 34 students using a student response questionnaire consisting of 14 statements, quantitative data was obtained to comprehensively measure the medias practicality. From the data collected, a total actual score of 1,618 was obtained, reflecting the students' positive perceptions regarding the medias ease of use and functional benefits. Through statistical calculations, a practicality percentage of 84.98% was obtained. This figure is not merely a formal statistic but a representation of the very high level of technology acceptance among students, given that this media is designed to operate on devices that are already familiar to them in their daily lives. These findings indicate that the developed learning media meets technical and pedagogical standards, making it highly

suitable for use in the learning process without requiring major revisions. Its practicality encompasses intuitive navigation, systematic presentation of material, and far more optimal use of classroom time compared to conventional methods. With a high level of practicality, this medium is able to minimize technical obstacles that often hinder the flow of communication between teachers and students, so that the main focus of learning can be directed entirely toward mastering the subject matter. This proves that the integration of Android devices as a learning medium is the right approach to meeting the needs of modern education, which demands flexibility and ease of access.

4.1.4. Student Task Performance Level

An analysis of task performance was conducted by comparing the average scores of students' learning outcomes based on their practice in preparing meeting minutes before and after using Android-based learning media. Field test results involving 34 students in Grade 11 MPLB 3 revealed a significant increase in students's academic achievement. This improvement was measured through three specific task performance indicators according to Nurnaeni (2017), as shown in Table 4.

Table 4. Task Performance Results for Grade 11 MPLB 3 Students'

Indicator	Before	After
Quality of document work	85	92
Timeliness of completion	80	95
Technical proficiency in operating office software	83	88
Average	82,67	91,67

Based on Table 4, students' average task performance scores increased by 10.89% after using Smart Meeting Admin. These findings demonstrate that the use of this tool has a significant positive impact on students' task performance in preparing meeting administrative documents accurately and systematically. The results in the table show that document automation reduces students' cognitive load, allowing them to focus more on the accuracy of meeting content and complete tasks more quickly.

4.1.5. Students' Level of Self-Regulated Learning (SRL)

The measurement of students' levels of self-regulated learning was conducted using a SRL questionnaire adapted to assess the extent to which students' are able to manage their cognitive processes and motivation while using Android-based learning media. This questionnaire was distributed to 34 students' as respondents, consisting of 14 items using a 1-5 Likert scale to accurately capture changes in their independent learning behavior. From the collection and tabulation of the questionnaire data, a total raw score of 2004 was obtained from all respondents.

Through statistical percentage calculations, an achievement rate of 84.20% was obtained. When this result is converted using the score interpretation criteria table, the students' level of learning independence after interacting with the learning media falls into the "Very High" category. This significant achievement strongly indicates that the developed media not only serves as a tool for information transfer but is also effective in stimulating students' self-regulation mechanisms. This demonstrates that students' have developed a high level of awareness regarding managing their study schedules, periodically monitoring their progress in understanding, and conducting self-assessments of their achievements without always relying on direct instructions from teachers. These high SRL scores reflect the development of a proactive learner character, which is a key asset for students to adapt to digital learning models that demand greater learning autonomy.

4.2. Discussion

The high validity scores from media experts and subject matter experts serve as the primary foundation for the successful implementation of this media tool in the learning process for Grade 11 MPLB students. The 90% score from media experts indicates that, technically, the Smart Meeting Admin app meets mobile device ergonomics standards, with its structured navigation and intuitive interface reducing technical barriers during initial use. Meanwhile, the content validity rate of 98% confirms that the meeting management learning content presented is highly accurate and aligns with current curriculum requirements. This combination of strong technical and content validity ensures that students not only gain easy access to the platform but also receive high-quality material that indirectly facilitates the students' self-regulation process due to minimal confusion regarding the app's operational procedures or the accuracy of the content. This operational readiness is reinforced by the results of a small-group pilot test involving 6 11th-grade MPLB students, who achieved an average practicality score of 89%. This high percentage at this early stage demonstrates that the platform is capable of adapting to the specific needs and characteristics of students' in the field through clear, readable instructions and an intuitive navigation flow.

The success of the small-scale pilot study served as an initial indicator that was subsequently consistently validated in a larger-scale field trial, where the application achieved a practicality score of 84.98%. These results confirm that the Smart Meeting Admin application fully meets the functional requirements of a mobile learning-based teaching aid. The use of smartphones as the primary platform facilitates accessibility that is not limited by time or space, thereby creating a more inclusive and adaptive learning environment for vocational high school students'. As explained by Bahri et al. (2025) optimizing smartphones through Android-based learning media is highly effective in significantly increasing student engagement compared to conventional methods, which tend to be passive and teacher-centered. The personal nature of mobile devices and their constant availability to students allow the knowledge transfer process to occur instantly, flexibly, and continuously. This operational practicality arises because the platform simplifies complex meeting management materials through an interactive interface and visually appealing design, thereby successfully minimizing the technical barriers often encountered in conventional digital learnings.

This flexibility and practicality in minimizing cognitive load align with the findings of Dharma et al. (2021), who state that the development of digital learning media based on systematic procedures has proven to be highly feasible and practical in supporting the process of conceptual understanding in today's dynamic digital era. This mobile platform provides students with the freedom to review material (retention) independently at their own individual learning pace, which is a key characteristic of modern smart learning environments. The integration of multimedia elements such as document-filling simulations and interactive exercises within Android devices makes the students learning experience more realistic and contextual. With the reduction of extraneous cognitive load due to the app's practical design, students can fully allocate their mental resources to processing the core subject matter, which in turn directly contributes to improved task performance in the classroom.

In this context, the concept of task performance refers to students' ability to carry out meeting administrative tasks well and effectively in order to achieve the established learning competency targets (Larasati et al., 2023). This is evidenced by a 10.89% increase in students' task performance scores. The Smart Meeting Admin app provides step-by-step guidance and an instant feedback system, which are crucial in helping students independently detect document creation errors early on. Psychologically, the integration of features such as automatic cost estimation (RAB) and AI-powered meeting minutes serves to reduce

unnecessary cognitive load. With the automation of mechanical administrative tasks, students' cognitive capacity can be fully allocated to higher-order thinking, the accuracy of document content and practical decision making which directly optimizes task performance. For example, in the meeting invitation letter creation feature, students are still required to perform minor edits and revisions. This design is intentionally crafted as a form of instructional scaffolding to hone administrative accuracy without overwhelming students' with the process of manual typing from scratch. The organized layout of materials guarantees clear instructions, reducing confusion when students complete worksheets solo.

This optimal task performance is driven by the quality of the instructional media, which is specifically designed to translate user engagement into tangible academic performance. Rina et al. (2025) note that individual contributions to task performance are significantly influenced by the level of user engagement with the tools they use. With learning media falling into the highly practical category, students demonstrate greater enthusiasm and engagement in completing each instruction and meeting management simulation. This emotional and cognitive engagement creates a psychological drive for students to give their best effort in completing tasks, which directly results in improved quality of administrative documents and mastery of meeting management competencies collectively within Class XI MPLB 3.

Furthermore, this improvement in academic performance is closely linked to the app's crucial role in fostering students' self-regulated learning (SRL), which achieved the "Very High" category with an average score of 84.20%. This very high SRL achievement demonstrates that this Android-based app serves as an effective stimulus for student autonomy in the digital age. Findings by Halimah et al. (2024) also confirm that a high level of technology acceptance is directly proportional to improved SRL abilities, as it reduces students' psychological barriers to independently exploring course material. The app's success in fostering self-directed learning stems from its self-directed activity flow. The meeting schedule planning feature, which automatically displays the next steps, acts as a metacognitive prompt, encouraging students to engage in self-monitoring of their learning progress.

In addition, the Document Center feature within the Smart Meeting Admin app fosters students' independence in resource management, as they are actively required to organize, save, and regularly retrieve their meeting data and documents. Thus, this application not only serves as a tool to streamline administrative tasks but also actively fosters students' self-regulation through an autonomous, flexible, yet structured learning experience. Qualitatively, during the field trial, students' demonstrated positive changes in learning behavior, specifically the ability to independently monitor and evaluate their own learning processes. Referring to Brenner's Theory, this platform has proven effective in facilitating students' monitoring of their learning processes, where the linear relationship between SRL and task performance demonstrates that students' level of digital learning autonomy acts as a primary determinant and a strong predictor of achieving optimal academic performance.

5. Conclusion

Based on the results and discussion, it can be concluded that this study produced the Smart Meeting Admin application, an Android-based learning tool for the Meeting Management module in the 11th-grade MPLB 3 class at SMKN 1 Malang. The results of the feasibility tests conducted by media experts, subject matter experts, and a small-group pilot study indicate that the application is highly valid and suitable for use in the learning process. The developed media has a very high level of practicality with an achievement rate of 84.98%. This proves that the media has intuitive navigation, an attractive visual design, and ease of

accessibility that effectively supports the smoothness of the instructional process both inside and outside the classroom. Beyond technical aspects, the use of this learning media has also proven effective in improving student task performance, as evidenced by a 10.89% increase in task performance scores. Further, the media implementation has strengthened students' Self-Regulated Learning (SRL), achieving a very high category with a score of 84.20%.

This study reinforces and expands the relevance of Brenner's Theory in the context of mobile learning. The findings regarding the linear relationship between Self-Regulated Learning (SRL) and task performance provide a new scientific contribution: that digital learning autonomy is not merely a secondary effect but a primary determinant (strong predictor) of students' optimal performance on practical tasks in the field of office administration. Practically, this application provides a concrete solution for schools to overcome the limitations of computer lab facilities without compromising the quality of practical learning. For teachers, this medium provides an efficient evaluation tool to measure meeting management competencies. For students, the existence of this application shifts their role from passive recipients of information to active and independent learners, both during and outside of school hours.

Although it yielded very positive results, this development study still has several limitations, namely the limited scope of the subjects and location where product testing and effectiveness measurements were restricted to a single small class and the limitation of the operating system platform as the new application was developed and optimized exclusively for Android-based devices. For future researchers, it is recommended to conduct experimental studies involving a control group to test the effectiveness of the media more broadly, as well as to enhance the development of the operating system (such as iOS) and application features in terms of more in-depth data synchronization and the integration of gamification elements to boost student motivation. Furthermore, these findings suggest that vocational curriculum policies should systematically integrate mobile learning innovations, while teacher professional development programs must prioritize training educators to design and implement digital tools that foster student autonomy.

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