

OfficeAsset Lab As Smart Learning Simulation Media For Vocational Students

Buyung Adi Dharma, I Nyoman Suputra, Andi Basuki
Universitas Negeri Malang, Malang, Indonesia

ABSTRACT

The rapid development of digital technology has transformed office administration practices, requiring vocational education institutions to equip students with competencies in OfficeAsset Lab. However, learning activities in vocational schools are still frequently dominated by conventional methods that provide limited opportunities for students to develop practical digital skills. This study aimed to develop a OfficeAsset Lab learning media to improve students' competencies in managing office assets through an interactive digital learning environment. The study employed a research and development approach using the Analysis, Design, Development, Implementation, and Evaluation model. The product was validated by media and subject matter experts and subsequently tested through small-group and large-group trials involving vocational high school students. The collected data were analyzed using descriptive quantitative and qualitative techniques based on expert validation, student responses, and learning outcomes. The findings indicate that the developed learning media achieved a high level of validity in terms of content, design, functionality, and usability. The implementation results also demonstrate that the media effectively improves students' understanding of office asset management, enhances practical skills in digital documentation and inventory management, and increases learning motivation and engagement through interactive simulations. The developed learning media provides an authentic digital office experience that aligns with current workplace demands and supports competency-based vocational education. The novelty of this study lies in the integration of OfficeAsset Lab simulations into a comprehensive learning platform that combines interactive practice, digital documentation, and competency assessment to strengthen students' readiness for the digital workplace.

Keywords: Digital learning media, OfficeAsset Lab, Vocational Education, Digital Competency, Learning Innovation.

Corresponding author

Name: Andi Basuki

Email: andi.basuki.fe@um.ac.id

INTRODUCTION

The rapid development of information and communication technology has brought significant changes across various sectors, including vocational education. Digital transformation requires educational institutions to adapt learning processes in order to produce graduates with competencies that are relevant to the demands of the modern workplace. Vocational High Schools as educational institutions oriented toward work readiness have a strategic role in preparing students to adapt to technological

developments and the needs of the business and industrial sectors (Banurea & Nasution, 2023; N. Hidayati, 2021). Therefore, integrating digital technology into learning activities has become an essential requirement, particularly in Office Management and Business Services programs, where administrative processes have shifted from conventional systems toward digital-based management (Anwar dkk., 2024; Isma dkk., 2022)

One of the essential competencies that must be mastered by vocational students in the field of Office Management and Business Services is the ability to manage office facilities and infrastructure administration. This competency includes various administrative activities, such as asset recording, item classification, inventory management, maintenance, data storage, and asset reporting. In the professional workplace, asset management processes have increasingly adopted digital systems that improve efficiency, data accuracy, and information integration (Caldera dkk., 2021). Consequently, vocational learning should not only emphasize conceptual understanding but also provide students with practical experiences using digital systems similar to those applied in real workplace environments.

However, learning processes related to office facilities and infrastructure administration in vocational schools still face several challenges. Learning activities are often dominated by theoretical approaches, textbook-based materials, and limited practical activities that represent actual workplace conditions (Fania dkk., 2024). Limited practical facilities, insufficient access to digital administrative applications, and the lack of technology-based learning media have resulted in less authentic and meaningful learning experiences for students (Silahati & Wardoyo, 2025). These conditions affect students' ability to apply asset management concepts systematically, particularly in utilizing digital technology as part of modern administrative practices.

Furthermore, conventional learning media are considered insufficient to illustrate the complexity of asset management processes in modern digital office environments. Students often acquire theoretical knowledge without having opportunities to practice asset management procedures directly. Meanwhile, current workplace demands require graduates not only to understand administrative concepts but also to possess digital literacy, accuracy in managing data, and the ability to operate information technology-based applications (Nurjanah dkk., 2022). Therefore, innovative learning media are needed to bridge the gap between classroom learning and real-world administrative practices.

The concept of OfficeAsset Lab provides a relevant approach to address these challenges. Digital-based asset management systems enable administrative processes to be conducted more effectively through structured data management, real-time information processing, and easier access to asset records and reports (Cahyaningrum & Sambharakreshna, 2024). Implementing this concept in vocational education can create a more contextual, interactive, and industry-oriented learning environment that supports students' competency development.

The utilization of OfficeAsset Lab as a learning simulation medium allows students to gain practical experiences through a *learning by doing* approach. Through digital simulations, students can practice various asset management activities, including inventory

data input, asset classification, information updates, and administrative reporting within a virtual environment that represents professional workplace systems (Ramadhani & Pahlevi, 2023). This approach enables students not only to understand theoretical concepts but also to develop technical skills and problem-solving abilities required in the workplace.

Previous studies have demonstrated that digital simulation-based learning media can enhance student engagement and strengthen practical skills in vocational education (Permansah dkk., 2023). Interactive learning environments provide students with opportunities to learn through direct experiences, improve critical thinking skills, and develop professional attitudes such as accuracy, responsibility, and work discipline. These characteristics are consistent with the principles of vocational education, which emphasize competency mastery through practical learning experiences (*learning by doing*) (Sumual dkk., 2024).

Several previous studies have investigated the integration of digital technology in vocational education. Banurea dan Nasution (2023) and A. Hidayati, Barr, dan Sigit (2021) revealed that the implementation of information technology in vocational learning plays an important role in improving the relevance of graduates' competencies to industrial needs. However, these studies mainly discussed technology integration in general and did not specifically focus on developing learning media for office facilities and infrastructure administration competencies.

Research on digital asset management has also shown that technology-based systems can improve the efficiency and accuracy of asset information management (Cahyaningrum & Sambharakreshna, 2024; Caldera dkk., 2021). Nevertheless, most studies have focused on organizational or industrial contexts rather than using digital asset management systems as learning media in vocational education. Meanwhile, studies regarding digital simulation media in vocational learning are still mostly limited to general simulations and have not specifically developed integrated office asset management simulations that represent real workplace systems.

Based on previous studies, there is a research gap regarding the limited availability of OfficeAsset Lab simulation media specifically designed to support office facilities and infrastructure administration learning in vocational schools. Previous research has generally examined digital administrative systems and simulation-based learning separately, while studies integrating digital asset management systems as contextual learning media for improving vocational students' competencies remain limited.

METHOD

This study employed a Research and Development (R&D) approach adapted from the development model proposed by (Borg & Gall, 1983). The model was modified into five stages to suit the characteristics of vocational learning media development and the needs of Office Management and Business Services programs in Vocational High Schools. The research aimed to develop OfficeAsset Lab Based on Smart Learning Media as a digital simulation medium to improve students' competencies in managing office facilities and infrastructure administration.

The scope of this research focused on developing an interactive digital simulation media that represents real workplace activities, including asset recording, inventory classification, data management, and administrative reporting. The operational definition of the research variable was students' competency in managing office facilities and infrastructure administration, measured through indicators of data accuracy, asset classification skills, digital system utilization, procedural understanding, and reporting ability.

The research was conducted in Vocational High Schools implementing the Office Management and Business Services expertise program. The participants consisted of media experts, subject matter experts, teachers, and students. The small-scale trial involved 50 students from one vocational school, while the large-scale trial involved 100 students from several vocational schools in East Java, Indonesia.

The development procedure consisted of five stages. The first stage was preliminary research, which included field studies and literature reviews. Field studies were conducted to analyze curriculum requirements, learning conditions, available resources, and students' needs related to digital asset management competencies. Literature reviews were conducted to examine concepts of office management learning, digital asset management, and simulation-based learning.

The second stage was initial product development, which involved designing the OfficeAsset Lab simulation system, learning modules, user guides, and assessment instruments. The product design was developed based on discussions with media experts and office management specialists to ensure its relevance to vocational learning objectives.

The third stage was expert validation and product revision. The developed media was evaluated by media experts and subject matter experts regarding design quality, content suitability, usability, and interactivity. The suggestions obtained from the validation process were used to improve the media before field implementation.

The fourth stage was small-scale field testing, conducted with 50 students to evaluate the practicality, usability, and initial effectiveness of the developed media. Data were collected through questionnaires, observations, and interviews. The results were used for further product refinement.

The fifth stage was large-scale field testing and final revision. The revised media was implemented with 100 students from several vocational schools. Data collection involved questionnaires, observations, interviews, and student performance assessments to determine the effectiveness of the media in improving students' competencies in office facilities and infrastructure administration.

The materials and instruments used in this research included the OfficeAsset Lab simulation platform, learning modules, user manuals, validation sheets, response questionnaires, observation guidelines, interview protocols, and competency performance assessment instruments.

Data were collected through expert validation, questionnaires, observations, interviews, and performance assessments. Expert validation was used to determine media and content feasibility, while questionnaires and interviews were used to evaluate

practicality and user experiences. Student performance assessments were conducted to measure competency improvement after using the simulation media.

Data analysis was performed using quantitative and qualitative approaches. Quantitative data from expert validation, questionnaires, and performance assessments were analyzed using descriptive statistics by calculating mean scores and percentages. The results were categorized into feasibility, practicality, and effectiveness levels. Qualitative data from observations and interviews were analyzed through data reduction, data presentation, and conclusion drawing to describe the learning process, student engagement, and challenges during implementation.

Data credibility was ensured through triangulation by comparing findings from expert validation, questionnaires, observations, and interviews. This process aimed to strengthen the conclusions regarding the feasibility and effectiveness of the OfficeAsset Lab Based on Smart Learning Media as an innovative digital learning medium for vocational education.

FINDING AND DISCUSSION

RESEARCH RESULT

This research produced an interactive web-based learning media called OfficeAsset Lab, which can be accessed through <https://office-asset-apps.blogspot.com>. The developed media is a Smart Learning-based simulation platform designed to support students' competencies in managing office facilities and infrastructure administration in the Office Management and Business Services (OMBS) program at Vocational High Schools (VHS). The media enables students to learn and practice digital-based asset management processes according to procedures applied in business and industrial environments.

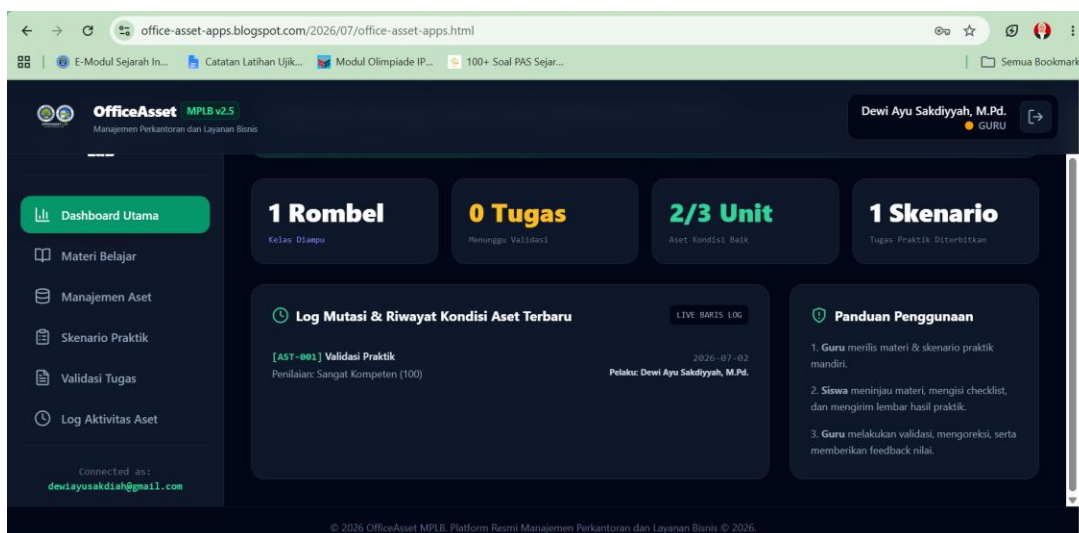


Figure 1. Teacher Dashboard Interface

The development of OfficeAsset Lab was based on the need for digital transformation in office asset management learning. The initial needs analysis showed that learning activities related to office facilities and infrastructure administration were still dominated by theoretical explanations and manual documentation. Teachers experienced limitations in providing practical learning environments that represent real asset management processes, including asset registration, classification, inventory management, borrowing procedures, maintenance, asset transfer, and reporting.

To address these challenges, OfficeAsset Lab was developed by integrating learning materials, digital simulations, evaluation activities, and competency assessments within a single platform. The media applies three main approaches: Smart Learning, simulation-based learning, and industry-oriented learning. Smart Learning is implemented through flexible and student-centered digital learning environments, while simulation-based learning provides scenarios that represent real workplace asset management activities. The industry-oriented approach is reflected through the adaptation of asset management procedures commonly used in professional organizations.

OfficeAsset Lab involves two main users: teachers and students. Teachers act as learning administrators who manage asset data, create simulation scenarios, provide assignments, monitor student activities, and evaluate learning outcomes. Meanwhile, students act as asset administrators who perform inventory management tasks based on given scenarios. This role-based system creates an interactive and collaborative learning environment that resembles actual workplace conditions.

The developed media includes several features that support learning activities, such as digital asset registration, inventory classification, asset condition monitoring, borrowing and returning management, maintenance scheduling, and digital inventory reporting. These features are aligned with the learning outcomes of the Office Management and Business Services program and are designed to strengthen students' practical competencies in digital asset management.

The feasibility of OfficeAsset Lab was evaluated through expert validation involving media experts and subject matter experts. Media experts assessed interface design, navigation, system functionality, usability, visual quality, responsiveness, and suitability with Smart Learning characteristics.

The results of media validation are presented in Table 1.

Table 1. Media Expert Validation Results

No	Assessment Aspect	Obtained Score	Ideal Score
1	User Interface Design	5	5
2	Navigation Ease	5	5
3	Simulation Interactivity	4	5
4	Device Responsiveness	4	5
5	Usability	5	5
6	Layout Consistency	4	5

7	Asset Management Features	5	5
8	Creativity and Innovation	4	5
9	System Functionality	5	5
10	Smart Learning Compatibility	5	5
Total		46	50

The media validation obtained a score of 46 out of 50, equivalent to 92%, which was categorized as very valid. This result indicates that OfficeAsset Lab has good usability, attractive design, and appropriate functionality to support digital simulation-based learning.

The material validation results are presented in Table 2.

Table 2. Material Expert Validation Results

No	Assessment Aspect	Obtained Score	Ideal Score
1	Alignment with Learning Outcomes	5	5
2	Accuracy of Asset Management Concepts	5	5
3	Material Completeness	4	5
4	Learning Objectives Clarity	4	5
5	Information Accuracy	4	5
6	Simulation Flow Suitability	5	5
7	Language Use	5	5
8	Integration Between Theory and Practice	4	5
9	Workplace Relevance	5	5
10	Meaningful Learning Experience	4	5
Total		45	50

The material expert validation achieved a score of 45 out of 50, equivalent to 90%, categorized as very valid. This indicates that the learning content, simulation scenarios, and activities are appropriate with the competency requirements of Office Management and Business Services and relevant to workplace practices.

After expert validation, revisions were conducted based on suggestions from validators, including improving the dashboard interface, adding asset management case variations, enhancing user instructions, and developing asset tracking features.

The revised product was then tested through small-scale and large-scale trials. The small-scale trial involved 50 students, while the large-scale trial involved students from several vocational schools. The results showed positive responses toward the use of OfficeAsset Lab. Students stated that the media helped them understand asset management procedures more systematically because they could directly practice digital inventory activities through simulations.

The results of the trials are shown in Table 3.

Table 3. Small-Scale and Large-Scale Trial Results

No	Trial Stage	Percentage	Category
1	Small-scale Trial	86%	Very Valid
2	Large-scale Trial	88%	Very Valid

The implementation results demonstrated that OfficeAsset Lab improved students' abilities in asset registration, inventory coding, classification, asset condition recording, borrowing and returning management, maintenance scheduling, and digital inventory reporting.

DISCUSSION

The development of OfficeAsset Lab represents an innovation in vocational learning designed to respond to digital transformation in office asset management. The increasing implementation of digital asset management systems in organizations requires vocational graduates to possess competencies not only in administrative concepts but also in the ability to operate digital-based management systems. This finding supports previous studies stating that digital transformation in office administration requires improved technological competence among vocational students (Cahyaningrum & Sambharakreshna, 2024; Caldera dkk., 2021)

The findings indicate that OfficeAsset Lab successfully addresses limitations in conventional learning approaches, which are often dominated by theoretical explanations and manual documentation. Learning office facilities and infrastructure administration requires practical experiences that represent actual workplace processes. Previous studies have emphasized that vocational learning should provide authentic experiences through practical activities that connect classroom learning with industrial practices (Fania dkk., 2024; Lastri dkk., 2024). Therefore, the simulation features in OfficeAsset Lab provide students with opportunities to practice asset management procedures in a safe and controlled digital environment.

The effectiveness of OfficeAsset Lab is strongly influenced by the integration of Smart Learning, simulation-based learning, and industry-oriented learning approaches. Through Smart Learning, students can access learning resources flexibly and participate in interactive learning activities. Meanwhile, simulation-based learning allows students to experience workplace-like scenarios without directly interacting with real organizational assets. This finding is consistent with (Ramadhani & Pahlevi, 2023), who stated that digital simulation media provides authentic learning experiences by allowing students to practice skills in environments that resemble real working conditions.

The validation results confirm that OfficeAsset Lab has high feasibility as a vocational learning medium. The media expert validation score of 92% and material expert validation score of 90% demonstrate that the developed platform meets technical, instructional, and content requirements. These findings support previous research

indicating that interactive digital learning media can improve learning quality by encouraging active, independent, and contextual learning experiences (Permansah dkk., 2023).

A key advantage of OfficeAsset Lab is its ability to integrate various learning components into one digital platform. Unlike conventional learning media that generally provide separate materials, exercises, or assessments, OfficeAsset Lab combines learning resources, simulations, assignments, authentic assessments, and competency monitoring. This integrated approach enables teachers to manage learning activities more effectively and allows students to develop competencies through continuous practice.

Furthermore, the implementation of OfficeAsset Lab contributes not only to technical competency development but also to the improvement of 21st-century skills. Through simulation activities, students develop accuracy, responsibility, systematic thinking, problem-solving skills, and collaboration abilities. These findings support (Sumual dkk., 2024), who emphasized that vocational learning based on practical activities contributes to both technical skills and soft skills development.

The trial results showed high acceptance levels from students, with 86% in the small-scale trial and 88% in the large-scale trial. These results indicate that OfficeAsset Lab is practical and user-friendly. Students perceived the media as more engaging and easier to understand compared with conventional learning methods because it provided direct experience in managing digital assets.

However, successful implementation of digital simulation media requires supporting factors, including teacher readiness, technological infrastructure, internet availability, and adequate computer facilities. Teachers play an important role as facilitators who guide students during simulation activities and encourage reflection on learning outcomes.

Overall, OfficeAsset Lab demonstrates that based Smart Learning Media can serve as an innovative solution for improving vocational learning quality. The integration of digital technology, simulation activities, authentic assessment, and industry-oriented learning creates a learning environment that is relevant to the needs of the digital workplace. Therefore, OfficeAsset Lab contributes to preparing vocational students who possess professional administrative competencies, digital literacy, and readiness to face workplace challenges in the era of digital transformation and Society 5.0.

CONCLUSION

The development of the OfficeAsset Lab learning media has successfully produced a valid, practical, and effective digital learning platform to support vocational students' competencies in office asset management. The validation results from media and material experts indicate that the developed media meets high standards of content quality, functionality, and usability. Furthermore, the implementation results demonstrate that OfficeAsset Lab enhances students' understanding and practical skills in managing office assets through interactive simulations, digital documentation, and competency-based learning activities. The media also increases students' learning motivation and engagement

by providing an authentic digital office environment. Therefore, OfficeAsset Lab can be utilized as an innovative learning medium to improve vocational education quality, strengthen students' digital competencies, and prepare graduates for the demands of the modern workplace in the era of digital transformation.

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