THE DEVELOPMENT OF STUDENT WORKSHEETS (LKPD) BASED ON ANDROID ON OBSERVATION TEXT MATERIALS AT VOCATIONAL SCHOOL

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Abstract	This study aims to develop an Android-based Student Worksheet (LKPD) on observation text material to improve the effectiveness and involvement of students in learning Indonesian at SMK 'Aisyiyah Palembang. Using a research and development (R&D) approach with the ADDIE model comprising Analysis, Design, Development, Implementation, and Evaluation stages, the study involved language experts, material experts, media experts, and grade X students as users. Data collection employed observation, interviews, questionnaires, and learning outcome tests. The data consisted of qualitative information from observations, interviews, and student feedback, and quantitative data from expert validation scores, student practicality questionnaires, and pretest-posttest results. Data sources included the experts, students, and the Indonesian language teacher. Analysis involved calculating expert validation percentages to determine validity, questionnaire percentages for practicality, and comparing pretest and posttest scores for effectiveness, with normality tests ensuring statistical reliability. Validation scores showed the LKPD to be highly valid, with language experts rating 94%, media experts 95%, and material experts 97%. Practicality tests yielded 91% and 92% in individual and small group trials, respectively. Effectiveness was evident with a significant increase in average scores from 54.58 (pretest) to 83.33 (posttest). These results demonstrate that the Android-based LKPD is feasible, practical, and effective as innovative learning media supporting the Independent Curriculum and digital learning in vocational schools.
Keywords	LKPD, Android, Observation Text, ADDIE.

INTRODUCTION

The development of information and communication technology has had a significant impact on various aspects of life, including the field of education. In the fast-paced digital era like today, learning can no longer rely solely on conventional methods. 21st-century education demands the integration of technology in the learning process to create an active, innovative, and relevant learning atmosphere to meet the needs of the times (Muhammad, 2020);(Utami, 2023);(Prananda, 2020). Teachers, as the spearhead of education, must be able to design learning strategies that are responsive to changes and technological developments (Prananda, 2020);(Rahma et al., 2024);(Ahmadi, 2017). Without adaptation to these developments, the learning process will be left behind and fail to meet the competency needs of students in the digital era. Therefore, innovation in technology-based learning media is a necessity in the world of modern education.

Utilization of technology in the world of education is no longer just an alternative, but has become an urgent need in the ever-growing digital era (Sitompul, 2022);(Wardani, 2023). The currents of globalization and digitalization have changed the learning paradigm from being conventional to being more open, flexible, and technology-based (Fonna, 2019);(Mhlanga, 2022);(Nur et al., 2025). The Ministry of Education, Culture, Research, and Technology (Kemendikbudristek) has also emphasized the importance of utilizing technology in the world of education through the Independent Curriculum. According to Shofia Rohmah et al., (2023) learning must encourage students to think critically, creatively, collaboratively, and communicatively by utilizing technology as one of its main tools. Therefore, digital learning media such as Android-based applications are not only relevant but also strategic to be integrated into modern learning in order to create interactive, contextual, and meaningful learning experiences for students.

The problem in teaching observation texts at SMK Aisyiyah Palembang arises from the suboptimal adaptation of teaching methods to the demands of the digital era. Initial observations revealed that the approach used remains conventional, focusing primarily on written texts without the support of visualizations or interactive media. As a result, students struggle to deeply understand the structure and content of observation texts. The lack of digital media, such as images, videos, or other visual aids, makes the learning experience abstract and less engaging. Furthermore, interviews with teachers indicated that many educators have limited digital literacy and have not yet fully integrated technology into the teaching process. The school has made some efforts to improve this condition, including the use of PowerPoint and YouTube videos, the application of

project-based learning methods, and the organization of internal teacher training. However, these efforts have not been fully effective due to infrastructure limitations, time constraints, and the lack of continuous professional development. Therefore, further innovation and support are needed to ensure that the teaching of observation texts becomes more contextual, interactive, and relevant to the needs of students in the digital age.

This is in line with research Feri & Zulherman, (2021) which reveals that the limitations of interactive learning media are one of the factors in students' low understanding of teaching materials. The current digital generation is more interested in visual and interactive media, and is more comfortable using technological devices such as smartphones than printed books (Eirlangga et al., 2024);(Shovmayanti, 2024). Students access more information through their gadgets, which opens up great opportunities for teachers to integrate technology in the form of Android-based learning media (Rahayu et al., 2023);(Sunarto, 2020);(Herawati, 2022). This media allows for more interesting presentation of materials through a combination of text, images, videos, and animations.

Several previous studies have shown the effectiveness of technology-based learning media in improving student learning outcomes. For example, research by Fitriana & Masjid, (2025) concluded that the use of application-based digital LKPD significantly increased students' conceptual understanding and engagement. Another study by Putri et al., (2022) also proves that Android applications in Indonesian language learning can increase students' interest in learning and critical thinking skills. Furthermore, research Utami & Suniasih, (2023) This study concludes that the development of interactive Student Worksheets (LKPD) based on mind mapping on the digestive system material is proven to be feasible and effective for use in science learning in elementary schools. Tamsiruddin, (2023) also stated that the implementation of interactive digital worksheets (LKPD) can enhance students' creativity and analytical skills in language learning materials at the junior high school level. Furthermore, Sodiq et al., (2021) emphasized that mobile application-based learning media not only improve learning outcomes but also facilitate teachers in providing quick and effective feedback. However, most of these studies still focus on elementary, junior high, or senior high school levels and have not specifically examined the development of Android-based LKPD for observational texts at the vocational high school (SMK) level.

Therefore, this study has an element of novelty that lies in the integration of various digital platforms and features that support learning observation texts. The use of applications such as Padlet for idea expression, FLIPHTML5 and Hyeazine for LKPD visualization, and Google Forms

for assessment are real forms of flexible and attractive Android-based learning innovation. This makes LKPD more than just a worksheet, but a digital learning ecosystem that encourages collaboration, creativity, and active participation of students. In addition, the approach used in this LKPD will integrate interactive multimedia that is designed contextually with the needs of students in vocational high schools, so that it is expected to increase the appeal and effectiveness of learning. The development of Android-based LKPD is also a form of real implementation of the spirit of Merdeka Belajar, where teachers are encouraged to innovate in creating a fun and meaningful learning experience. By combining a scientific approach and digital technology, this learning media will provide space for students to explore, observe, and interpret observation texts in a more creative and interactive way.

Based on the background, this study aims to develop a valid, practical, and effective Android-based Student Worksheet (LKPD) in supporting the learning process of observation texts at SMK 'Aisyiyah Palembang. It is hoped that this media will not only improve students' understanding of the material but also be an inspiration for other teachers in developing technology-based learning in the school environment.

METHOD

The paper applies Research and Development (R&D). It is defined as a scientific way to research, design, produce, and test the validity of products that have been produced. (Sugiyono, 2020). This study developed a product in the form of an Android-based LKPD for observation text material at SMK 'Aisyiyah Palembang. The development of this LKPD uses the ADDIE development model. The ADDIE model has five stages, namely: 1) Analyze, 2) Design, 3) Develop, 4) Implementation, 5) Evaluation.

This model was chosen because it offers a systematic and flexible framework for developing instructional products based on students' needs and the characteristics of the learning material. The research was conducted at SMK 'Aisyiyah Palembang, South Sumatra Province. The implementation took place during the odd semester of the 2024/2025 academic year, specifically in October 2024, during the product development and implementation stages.

The types of data collected in this study include both qualitative and quantitative data. Qualitative data were obtained from observations, informal interviews, feedback from expert validators, and student responses to the use of the LKPD. Meanwhile, quantitative data included

expert validation results (in percentage scores), student practicality questionnaire results, and pretest and posttest scores on the observational text material. The data sources in this study comprised grade X students of SMK 'Aisyiyah Palembang, three validators (content expert, language expert, and media expert), and a Bahasa Indonesia teacher who provided initial input on learning needs and assisted with product implementation. Data collection in this study was carried out using several techniques: observation, documentation, questionnaires, expert validation, and written tests. Observation was used to identify initial problems and student characteristics. Documentation included curriculum analysis, Learning Objective Flow (ATP), and the collection of relevant teaching references. Questionnaires were used to gather student responses on the practicality of the developed LKPD. Expert validation was conducted by three validators (language, content, and media experts) using validation instrument sheets to assess the feasibility of the product. Meanwhile, written tests in the form of pretests and posttests were used to measure the effectiveness of the LKPD in improving students' learning outcomes in observational text material.

The population in this study consisted of all grade X students at SMK 'Aisyiyah Palembang. The sample included 24 grade X students who were selected as the field trial group. The sampling technique used was purposive sampling, selected deliberately based on specific criteria—namely, that the class was deemed to have relevant needs for the development of teaching materials on the observational text topic.

The product development process in this study followed the five stages of the ADDIE model: Analyze, Design, Development, Implementation, and Evaluation. In the analysis stage, the researcher examined the Merdeka Curriculum, student characteristics, and learning materials. The analysis revealed that many students had difficulty understanding observational text material and demonstrated low learning motivation, highlighting the need for more engaging and interactive instructional materials.

In the design stage, the researcher created an initial design of the Android-based LKPD, including layout design, content selection, exercise formatting, and reflection components. The design was based on references from books, journals, the Merdeka Teaching Platform (PMM), and Guru Berbagi. Next, in the development stage, the LKPD was created using the Canva application and validated by three experts: a content expert, a media expert, and a language expert. The product was revised based on suggestions and feedback from the validators to ensure its quality and feasibility before classroom implementation.

In the implementation stage, a field trial was conducted with 24 students through a pretest and posttest on October 15 and 30, 2024. The average pretest score was 54.58% (categorized as less valid), while the posttest score improved to 83.33% (categorized as valid), indicating significant learning gains after using the LKPD. The final stage, evaluation, was conducted to assess the validity, practicality, and effectiveness of the LKPD based on expert validation, student response questionnaires, and the improvement in test scores. Additionally, the researcher conducted learning reflection using a Google Form completed by students to gather their feedback and learning experiences with the product. The evaluation results showed that the developed LKPD is feasible and effective for use in teaching observational texts.

The data analysis techniques used in this research included validation analysis, practicality analysis, effectiveness analysis, and a normality distribution test. Validation analysis was conducted by calculating the percentage scores from the experts to assess the content, appearance, and language validity of the developed LKPD. Practicality analysis used data from student response questionnaires, which were processed into percentages to determine how easy and appealing the LKPD was to use. Effectiveness analysis was carried out by comparing pretest and posttest results, calculated through average scores and percentage improvement in student learning outcomes. Additionally, a normality distribution test was performed on the posttest data to ensure it met statistical criteria and was suitable for drawing conclusions.

FINDINGS AND DISCUSSION

Findings

This research is to produce a product in the form of LKPD. This research is included in the type of R&D (Research and Development) research using the ADDIE (Analyze, Design, Development, Implementation, Evaluation) model.

Analysis (Analyze)

Before conducting the research, the researcher conducted an analysis of the curriculum, students, and materials. This aims to find out what the researcher needs to make the product. The details of the three analyses are as follows:

Curriculum analysis is carried out to find out what curriculum is used in the teaching and learning process. The curriculum used by SMK 'Aisyiyah Palembang, especially class X, is the independent curriculum. The independent curriculum emphasizes meaningful learning for

students, and students are required to be more active in learning. The researcher also analyzed the Elements, Learning Achievements (CP), and Learning Objectives (TP) in the Learning Objective Flow (ATP) of the independent curriculum, which was developed, including the Observation Text material.

Student analysis is very important to do, because researchers can find out what problems are faced by students during learning activities. From the analysis carried out, the researcher found several problems that emerged, including: (1) Lack of student interest in learning Indonesian, caused by a lack of motivation and encouragement from students to increase their interest in learning Indonesian, especially in the Observation Text material, (2) Lack of presentation of interesting teaching materials.

From the research results, it was found that so far the learning outcomes of students have been less than satisfactory because the teaching materials are less interesting for students to learn, so an alternative is needed to solve this problem, namely by developing LKPD to make it easier for students to understand the material. The material analysis was carried out to select essential material from all the material that the researcher studied, at least it must be mastered and owned in the learning process. The choice of observation text material was made because some students got scores that did not meet the standard score, namely 70, so a solution was needed to address this problem.

Design

Collection of References

Before designing the LKPD, the researcher searched for and collected several references that were used as references in developing the LKPD. The references used and taken from various sources that were considered relevant and in accordance with the material that had been selected in developing the LKPD. The sources used as references by the researcher were journals, books, Guru Berbagi, and the Merdeka Mengajar Platform (PMM). After obtaining various references, the next step taken by the researcher was to start designing the product.

LKPD Design

At this stage, the researcher designed the LKPD as attractively as possible in order to attract the interest and attention of students to study the material in more depth. The results of this design began with the creation of the front cover, selection of writing formats, selection of supporting images, and selection of learning steps that were in accordance with the material. In addition, the design of this LKPD cannot be separated from the assistance of validators, starting from language

expert validators, media expert validators, and material expert validators. Each validator has their own duties in completing the LKPD so that the LKPD that was developed can be used as a suitable one.

Development

At this stage, the researcher began to develop teaching materials in the form of LKPD that were in accordance with the initial design at the planning stage. To develop teaching materials, the researcher used the Canva application. This LKPD is made in the form of printed media so that it is practical for students to use during learning activities.

After the analysis and design, the researcher developed the product, namely teaching materials in the form of LKPD. This stage is also inseparable from the validators in order to produce a good and attractive product. However, of course, the product produced has shortcomings in each process. Therefore, validation from the validator is needed so that the product can be used by students. The following are the results of the LKPD products that have been developed.
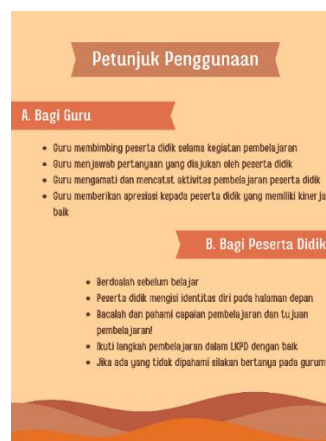
Figure 1. Cover of LKPD

Figure 2. Instructions for Using LKPD

Learning Outcomes (CP) and Learning Objectives (TP)

Figure 3. CP and TP

Name of the Element to be Achieved

Figure 4. Name of Elements to be achieved

Naming the elements in each learning activity makes it easier for teachers in the learning process, so that when teaching, teachers can directly identify what steps must be taken during learning activities.

Initiator Questions

Figure 5. Igniter Question
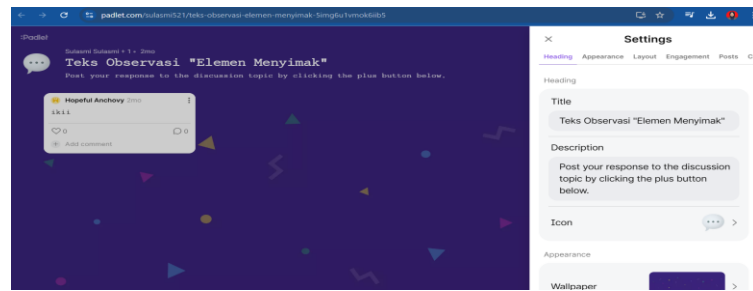
Figure 6. Padlet Discussion Board Creation Process

After students use QR, a sticky notes sheet will immediately appear to answer the questions asked. In addition to being able to add text, students can also add images and videos to their answer sheet.

Summary of materials

Figure 7. Summary of Materials

Learning Reflection

Figure 8. Learning Reflection

Reflection is used as a teacher's correction material for subsequent learning activities. In the independent curriculum, reflection is a mandatory thing to do during the learning process. Learning reflection is not only beneficial for teachers but also for students. Reflection activities for students

can be useful for channeling expressions from the learning process that is taking place and has been carried out. Students can express whether the learning process is going well or not. Meanwhile, for teachers, learning reflection activities are useful as a review of a group or class. This will later be useful for describing the situation and conditions of a class, so that the potential of each individual and the group can be more visible. Learning reflection is carried out through a previously created Google Form. In the learning reflection activity, there are several questions that must be answered by students.

Expert Validation Results

To obtain accountable and high-quality research results, particularly in evaluating the feasibility of the developed Android-based Student Worksheet (LKPD), this study involved three experts: a material expert, a media expert, and a language expert. Each expert assessed the LKPD using a validation instrument tailored to their area of expertise, which included indicators such as content accuracy, instructional quality, language clarity, visual design, and media suitability.

1. Material Expert Validation

The material expert focused on evaluating the accuracy, relevance, and depth of the content in the LKPD. The validation instrument consisted of 10 indicators, including alignment with learning objectives, concept clarity, content appropriateness for students' cognitive level, and coverage of the observation text topic. The material expert gave a total score of 97%, categorizing the LKPD as *very valid*. The expert also recommended enhancing the contextual examples used in some exercises to better reflect real-life situations relevant to vocational students.

2. Media Expert Validation

The media expert assessed visual aspects and user experience, including layout, typography, color harmony, image quality, and navigation flow (since the LKPD was designed in digital format using Canva). The media validation instrument included eight indicators. The media expert provided a total score of 95%, also classifying the product as *very valid*. The expert suggested minor adjustments to the spacing of text and consistent placement of navigation icons to improve readability and interface uniformity.

3. Language Expert Validation

The language expert focused on the linguistic elements, such as grammar, spelling, sentence structure, and clarity of instructions and questions. The instrument used contained seven indicators evaluating standard and communicative use of language appropriate for grade X vocational school

students. The language expert awarded a total score of 94%, falling into the *very valid* category. Feedback included correcting a few typographical errors and improving the wording of some reflective prompts to make them clearer and more engaging.

Based on the combined validation scores—Material Expert (97%), Media Expert (95%), and Language Expert (94%)—the LKPD was declared *very valid* and appropriate for implementation in learning activities. Revisions were made in accordance with expert suggestions to ensure that the final version of the LKPD met high standards of instructional design, content relevance, and usability.

Implementation

After conducting one-on-one and small group trials, the next step was a field trial aimed at testing the effectiveness of the developed Android-based LKPD in a real classroom setting. The field trial was conducted in one class consisting of 24 students of grade X at SMK 'Aisyiyah Palembang. The implementation was carried out over three classroom meetings, each with specific instructional goals aligned to the learning objectives of the observation text material.

Meeting 1: Pretest and Introduction of Observation Text

The first meeting began with the administration of a pretest to assess students' initial understanding of observation texts. After the pretest, the teacher introduced the concept of observation texts, their characteristics, structure, and purpose. Students were then introduced to the Android-based LKPD. The teacher guided students in navigating the digital worksheet, explained its features, and ensured all students could access and operate the LKPD via their Android devices.

Meeting 2: LKPD-Based Learning Activities

In the second meeting, students engaged fully with the LKPD. Activities included reading an example of an observation text, answering comprehension questions, identifying the structure and language features, and completing related exercises. The LKPD also included visual supports and guiding questions to enhance understanding. The teacher facilitated the session by moving between groups, answering questions, and encouraging discussion. At the end of the session, students were asked to write a brief observation paragraph based on a real object around them.

Meeting 3: Practice and Posttest

The third meeting focused on students applying their understanding by creating a complete observation text based on real-world observations (e.g., school environment, tools, or animals). They worked independently using prompts in the LKPD and received feedback from the teacher. After

completing their writing, the posttest was administered to evaluate students' learning outcomes after using the LKPD. This session concluded with a reflection activity via Google Form, where students shared their experiences, challenges, and perceptions regarding the use of the Android-based LKPD.

This pretest was conducted previously on October 15, 2024, and a posttest was also conducted on October 30, 2024. The field test was conducted on 24 students. Initially, an initial test (pretest) was given on the observation text material. Furthermore, a final test (posttest) was conducted on the observation material. Here are the results of the trial test conducted.
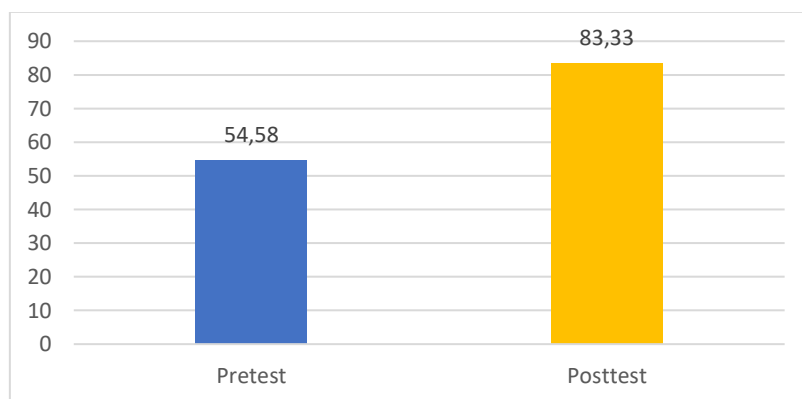

Figure 9. Field Trial Results

Based on the image, it can be seen that the pretest score that was tested got a percentage of 54.58, which is included in the less valid category, while the pretest score got a percentage of 83.33, with the valid category. It can be seen from the table above that the learning process has increased.

Evaluation

Based on the results of the study, particularly from the student response questionnaire regarding the practicality of the LKPD and the posttest outcomes, the developed LKPD demonstrated high quality in terms of validity, practicality, and effectiveness. The LKPD was declared valid based on expert validation involving a language expert (94%), a media expert (95%), and a material expert (97%). It was also declared practical, as shown by the results of individual and small group trials, which yielded practicality percentages of 91% and 92%, respectively.

To assess the effectiveness of the product, a pretest and posttest were conducted with 24 students in a field trial. The pretest, administered before the implementation of the LKPD, resulted in an average score of 54.58, which falls under the "low" category. After the implementation of the Android-based LKPD through a series of structured learning activities, the posttest was conducted and showed a significant improvement, with the average score rising to 83.33, which is categorized

as "high." This increase in learning outcomes clearly indicates that the LKPD was effective in improving students' understanding of the observation text material.

Additionally, a learning reflection was carried out through Google Forms, in which students expressed positive feedback regarding the LKPD, stating that it was engaging, easy to use, and helped them better understand the material. This reflection further confirmed that the Android-based LKPD is not only valid and practical but also effective in supporting student learning in accordance with the Independent Curriculum. Overall, the evaluation phase demonstrates that the LKPD meets the necessary criteria to be implemented widely in vocational school learning settings.

Discussion

The development of Android-based Student Worksheets (LKPD) in this study showed very satisfactory results in terms of validity, practicality, and effectiveness. Based on the results of expert validation and field implementation, the product successfully met the quality standards of innovative instructional materials and was declared suitable for use in teaching observation texts in vocational schools. The validation scores were high across all expert assessments: language experts (94%), media experts (95%), and material experts (97%). Additionally, student responses indicated that the LKPD was engaging, accessible, and helped them understand the content more easily. The improvement in students' learning outcomes from an average pretest score of 54.58 to a posttest score of 83.33 demonstrated the effectiveness of the product in practical classroom settings.

As Sudjana (2016) and Hapinas (2025) stated, the quality of learning is greatly influenced by the effectiveness of the media used to deliver the material. The findings from this study align with that view, as the Android-based LKPD proved to enhance students' understanding of observation texts, especially at SMK 'Aisyiyah Palembang. Teachers reported that, prior to the implementation of this LKPD, students had low engagement and often struggled with the structure and content of observation texts due to the textual and abstract nature of the teaching materials. The existing methods lacked visual and interactive support, resulting in a learning process that did not align with students' digital learning tendencies.

This study followed the ADDIE development model (Analysis, Design, Development, Implementation, Evaluation), a systematic approach widely used in instructional design (Branch, 2009). During the analysis phase, the researcher examined the Merdeka Curriculum implemented at SMK 'Aisyiyah Palembang, focusing on the relevant learning outcomes (CP) and learning objectives (TP). The findings revealed a strong need for engaging materials to stimulate student interest and

foster independent learning, which is a core principle of the Merdeka Curriculum. This aligns with the view of Nurrahman et al., (2022), who emphasize that learning media must be adapted to the characteristics of students to be effective.

In the design and development phases, the LKPD was created using Canva to integrate text, visuals, and interactivity. This included features such as QR-code-based prompt questions, reflection activities via Google Forms, structured exercises, and contextual learning tasks. These design choices supported the principles outlined by Palguna, (2024), dan Silalahi, (2024) who highlighted that the combination of digital visuals, text, and interaction significantly improves students' absorption of information. Feedback from validators led to necessary revisions that enhanced the quality of the LKPD's presentation and instructional content. This shows that teaching material development requires not only creativity but also expert evaluation to ensure pedagogical accuracy and effectiveness (Magdalena, 2023; Tamrin, 2023).

Field implementation at SMK 'Aisyiyah demonstrated the practical success of the LKPD. Students actively participated in digital activities and demonstrated improved comprehension through both written tasks and assessment results. This improvement was statistically significant, with the data meeting normality requirements. According to Mahanani et al., (2022) and Fahrurrozi, (2020), empirical testing is essential to prove the functional validity of learning tools. Compared to previous studies, which often focused only on making learning more fun and engaging (Parapat et al., 2023), this research integrates technological advances to directly respond to the challenges of 21st-century learning.

The use of Android-based LKPD also affirms the relevance of digital literacy in vocational education. This development not only enhances learning outcomes but also prepares students for the digital competencies they need in the workforce. As Putranta et al., (2021), and Haniah et al., (2020) stated, higher-order thinking skills (HOTS) are closely linked to learning tools that stimulate analysis and evaluation. The LKPD developed in this study supports such cognitive processes through digital features that encourage independent thinking and contextual understanding.

Nevertheless, the study also recognizes that while the LKPD is valid and effective, its implementation may face challenges in schools with limited access to technology. As noted by Putri, (2025), disparities in digital access remain a barrier in vocational schools. To address this, the LKPD should be adapted into hybrid or printable formats to ensure equitable access for all students. Moreover, design platforms like Canva have proven effective in enabling teachers to develop

visually engaging digital materials without requiring advanced technical skills (Harida et al., 2023);Amalia et al., (2025);Ramdhani et al., (2024).

Looking forward, the development of this LKPD could benefit from adopting the Universal Design for Learning (UDL) framework to ensure inclusivity across diverse learners. The success of this Android-based LKPD at SMK 'Aisyiyah Palembang offers a promising model that can be replicated or adapted in other vocational schools seeking to integrate digital tools into their Indonesian language curriculum.

CONCLUSION

The development of the LKPD in this study was carried out with careful consideration of the curriculum implemented at SMK 'Aisyiyah Palembang, namely the Merdeka Curriculum, as well as the specific characteristics and learning needs of the students. The selection of materials was based on the Learning Objectives Flow (Alur Tujuan Pembelajaran/ATP), ensuring that the content aligned with the expected competencies. As such, the LKPD was designed to effectively support students during classroom activities and improve their academic performance in observation text material. The design also emphasized the integration of technology to enhance student engagement and interactivity in line with the demands of the Industrial Revolution 4.0. This technological approach aimed to make learning more relevant, attractive, and accessible to today's digital-native students. Specifically, at SMK 'Aisyiyah Palembang, where previous learning activities were still predominantly textual and lacked visualization, the introduction of the Android-based LKPD addressed these challenges directly. Based on the final assessment (posttest) administered after the implementation of the LKPD, there was a notable improvement in student learning outcomes. This indicates that the use of the Android-based LKPD not only contributed positively to student comprehension and participation but also demonstrated its feasibility and effectiveness as a learning tool within the vocational school context.

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