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Development and Effectiveness of Flipbook-Based E-LKPDof Electronic Student Worksheets (E-LKPD) Based on Flipbook

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Abstract
Student-centered learning serves as the primary foundation in the educational process. Analyzing the structure of scientific works is a critical component in Indonesian language instruction at Phase F. Through the implementation of student-centered learning, educators can utilize technology to enhance the learning process and develop engaging teaching materials. This study aims to describe the effectiveness of electronic student worksheets (E-LKPD) assisted by flipbooks in teaching the analysis of scientific works. This developmental research employs a qualitative descriptive approach, focusing on the eleventh-grade students of SMKN 4 Surabaya. The validation results of the E-LKPD indicate an 82% feasibility score, as assessed by subject matter experts. Student responses to the flipbook-assisted E-LKPD for analyzing the structure of scientific works show an 85.6% level of effectiveness. Moreover, 98.5% of students reported that the flipbook-based E-LKPD significantly aided their understanding of the structure of scientific works on the theme of nature conservation. A key factor contributing to this preference is the extensive benefits students gain as valuable preparation for their future lives.

Keywords: E-LKPD, Flipbook, effective, scientific writing analysis

Introduction

Technology plays a pivotal role in supporting teaching and learning processes today. Its utilization is expected to foster innovative, interactive, and meaningful learning experiences for students (Sujinah et al., 2023). This aligns with the principles of the Merdeka Curriculum, which emphasizes student-centered learning as one of its core objectives. Technology empowers students to access diverse information and resources, extending beyond traditional textbooks. It also equips students with 21st-century skills, including critical thinking, communication, collaboration, and creativity. By leveraging technology, students can create presentations, work on collaborative projects, and produce creative outputs.

The integration of technology into learning is anticipated to make the process more engaging and interactive, thus supporting students in realizing their independent and joyful learning potential. One effective technological tool in education is the Electronic Student Worksheet (E-LKPD). E-LKPD offers advantages over conventional worksheets, being more interactive, engaging, and easily accessible for students. Moreover, E-LKPD facilitates independent learning and enhances students' motivation to learn.

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Indonesian language learning in the *Merdeka* Curriculum for vocational high schools focuses on developing communication skills, particularly those essential in professional settings. These competencies include understanding and using Indonesian effectively in everyday conversations, speeches, news articles, and scientific reports. Vocational students are expected to demonstrate proficiency in using Indonesian appropriately across various contexts, such as public speaking, writing job application letters, and creating presentations. Additionally, Indonesian language instruction aims to cultivate critical and creative thinking skills. Through this learning process, students are encouraged to analyze and generate new ideas, solve problems, and make effective decisions. This approach ensures that students not only master linguistic skills but also develop the ability to think innovatively and respond effectively to challenges in both academic and professional environments.

Scientific work analysis is a crucial component in Indonesian language instruction for vocational high schools. Learning how to analyze scientific works enables students to develop various skills beneficial for their personal lives and professional careers. Project-Based Learning (PjBL) can serve as an effective approach to help students grasp the subject in a more engaging and meaningful way. Adequate teaching materials are essential to ensure the achievement of learning objectives (Sujinah et al., 2021).

PjBL is a student-centered learning approach that emphasizes hands-on and experiential learning. Within the Merdeka Curriculum framework, PjBL is a key strategy for fostering deeper learning and preparing students for 21st-century challenges. The teacher's role in the Merdeka Curriculum shifts towards being a facilitator, guiding and mentoring students in their independent learning and growth, rather than serving as the sole source of knowledge.

Studying scientific work analysis equips students with valuable life and workplace skills. The PjBL components applied to scientific work analysis are designed to be engaging and authentic. By adopting the theme of Environmental Conservation, the learning process integrates scientific work analysis with pressing global environmental issues, providing students with a relevant and contextualized educational experience.

The Merdeka Belajar Curriculum emphasizes student-centered learning and encourages the use of innovative teaching methods to address diverse learning needs. Flipbooks, as interactive digital publications, effectively meet the demands and challenges of teaching in the digital era. The integration of flipbook-based Electronic Student Worksheets (E-LKPD) offers several advantages, such as increased engagement and accessibility. These E-LKPDs provide captivating and interactive learning experiences that capture students' attention while simplifying complex concepts. Their visual appeal and multimedia integration—featuring elements like images, videos, and interactive simulations—enhance the overall learning process, making it more visually engaging and impactful.

Based on this background, this study aims to describe the feasibility of the developed E-LKPD, students' responses, and their motivation toward the flipbook-based E-LKPD in analyzing the structure of scientific works in the eleventh-grade class at SMKN 4 Surabaya.

Method

In contrast to Kharis et all. who uses design-based research based on current research and in systematic documentation and evaluation (Kharis et all, 2022), this research is a type of research and development or R & D with the ADDIE development model which includes 5 stages: analysis, design, development, implementation, and evaluation. This research was conducted at SMK Negeri 4 Surabaya. The subjects of the study were 32 students of class XI

DKV SMK Negeri 4 Surabaya. The data collection technique was a questionnaire. Questionnaires for material expert validators aim to validate the suitability of the material and the use of language, expert validator questionnaires aim to validate teaching materials and E-LKPD Flipbook design, questionnaires for students aim to determine student response and motivation. Data in the form of validation results and student responses were analyzed using descriptive analysis.

Results

The development of flipbook-based Electronic Student Worksheets (E-LKPD) for the subject of analyzing scientific works follows the procedures of the Research and Development (R&D) ADDIE model. This model consists of five systematic stages: Analysis, Design, Development, Implementation, and Evaluation. Each stage is carefully executed to ensure the creation of effective and engaging teaching materials that meet the learning objectives and cater to students' needs.

Preliminary Research

Before developing flipbook-based Electronic Student Worksheets (E-LKPD) for the topic of analyzing scientific works, the researcher conducted a preliminary study through a literature review and interviews with students and Indonesian language teachers at SMKN 4 Surabaya. Based on interviews with the eleventh-grade Indonesian language teacher, it was revealed that several teaching methods were used in Indonesian language instruction. The most dominant method was the lecture method. Teaching materials and assignments were based on textbooks borrowed from the SMKN 4 Surabaya library. Occasionally, students were taken to the library to search for references using printed books and the internet. Based on interviews with students, it was found that learning was still centered on standalone Indonesian language content, without integration with other subjects to make it more relevant to students' lives.

The emerging issues include the fact that the available textbooks do not align with the Merdeka Curriculum, and most students have not yet received the latest e-books. The distribution of e-books is hindered by traditional mindsets, with a preference for physical books deemed easier to use. Teachers also admitted to struggling with ideas for implementing learning strategies, especially for the topic of analyzing scientific works. As a result, they rely on practical approaches by assigning analysis tasks based on textbook instructions.

Interviews with students revealed that they were not very interested in the "Environmental Conservation" topic. Their knowledge of environmental conservation was limited. They perceived environmental conservation as a government initiative unrelated to the competencies of their chosen vocational field.

Needs analysis

Based on the results of the preliminary study that students want learning that is more varied and facilitates the achievement of learning objectives. Therefore, learning materials are needed to streamline the learning process, especially the material for analyzing the structure of scientific papers. Gadgets have become students' best friends, so flipbook technology-based development will help students because it can be used anytime and anywhere. After the characteristics of the material are analyzed based on learning objectives, learning outcomes, and the flow of learning objectives, it is then synchronized with the needs according to the competence of student expertise.

Design

Electronic learner worksheets containing material on analyzing the elements of scientific work are designed with the aim of providing educational, acceptable, good quality learning, attractive appearance, easy access, and making students more enthusiastic about learning. This worksheet has a concept of novelty that facilitates teaching and learning activities by utilizing technology that makes this learning a flipbook so that it is easily accessible anywhere and anytime. At this stage, the learning material is designed to analyze scientific papers by choosing the theme of nature conservation with green nuances as in the display.

Development

Activities at the development stage of learning to analyze scientific papers with the help of flipbooks for class XI DKV are produced. The process of making this learning by utilizing hardware (hardware) in the form of a laptop, software (software) in the form of Canva education integrated with FlippingBook. The learning tools used are learning outcomes and the flow of learning objectives for phase F. Starting with making layouts using Canva, compiling activity/work sheets in word files that are linked in google drive so that they can be linked. There are three activities prepared, namely (1) linking the worksheets of each activity in the Canva design so that access can be easier; (2) linking worksheets that students can download separately through the drive; and (3) linking. After the drafting process is complete, the file in canva is linked to become a flipbook by selecting the next process in the design of the canva option to become a Flipbook which is done online. The flipbook link was distributed for ready use.

Implementation

At this stage, it is implemented in a real situation in class XI DKV. During implementation, the design that has been developed is applied to actual conditions. Teachers need to pay attention to learning steps so that the implementation of the learning process is appropriate and appropriate and can achieve the learning objectives that have been applied.

Evaluation

At this stage, what is done is an assessment by material expert validators, and design experts to analyze strengths and weaknesses. The deficiencies found are then followed up with improvements according to the experts' suggestions. Expert Validation Results (a) Provide appropriate learning objectives, the whole and not cut off so that understanding can be received in a structured way; (b) E-LKPD is good, there are instructions for using E-LKPD, but the instructions given must be coherent and in accordance with the flow of learning objectives; (c) the presentation of the material is good, it would be nice to arrange the content of the material step by step according to the scientific paper framework, for example meeting 1 discusses the background of the problem then the activity is how to make a good background, meeting 2 makes the purpose of the problem then the activity is children practicing making research objectives; (d) differentiated learning in this e-LKPD has not been raised, it is necessary to raise how learning is kinesthetic, audio, visual, so that all can be well served and maximized; (e) The type of question should be tiered using the revision of Bloom's taxonomy, starting from C1-C6 questions so that it fits the way of thinking of

scientific paper construction; and (f) students must be directly involved and have experienced in the pre, process and post-making of scientific papers.

Discussion

The results of this study are Flipbook-based E-LKPD in the material of analyzing scientific papers can increase learning motivation in Indonesian language subjects. The development of this Flipbook-based E-LKPD aims to produce products that help the learning process in the classroom. Flipbook maker is an application for making e-books, e-modules, and e-magazines whose presentation results display interactive simulations like opening a book in electronic form. Flipbook is currently integrated with Canva so that the creation can be done entirely in Canva. If usually Canva designs can be downloaded, to continue to become a flipbook, the canva design is continued again by sharing it in the form of a design and then choosing a flipbook as the final form of design.

Student-centered learning in the independent curriculum encourages students to play an active role during the learning process. Students have their own responsibilities and roles in the learning group. Learning in SMK is certainly different from learning in high school or other levels. SMK focuses more on vocational training that provides practical skills and knowledge in specific areas of work. These areas are aligned with industry demands and labor market trends. Students are more directed to engage in workshops, laboratories, internships and project-based learning.

One of the student-centered learning practices is to implement differentiated learning. One of its characteristics is to offer a variety of choices both in how to learn, what to learn, and how to demonstrate understanding of the material. Flipbook-assisted E-LKPD on the material of analyzing the structure of scientific papers takes one of the differentiations by offering students to complete activities or learning processes in three options.

The first choice, namely 3.8% of learners, chose to do the activity in the notebook and then the notebook was collected. The teacher's job is to correct manually. The second choice that is more dominantly chosen by students is uploading both word / pdf files as much as 96.2%. This proves that learning by utilizing digital technology is more attractive to students. The advantages of Flipbook-assisted E-LKPD on the material of analyzing the structure of scientific papers are complemented by integrating worksheets in the download drive, and also the task collection link so that it is more interactive.

In addition, a positive response was obtained from the students' assessment of the general response statement using 5 scales. The general response statement of 47% of students gave a positive response to the existence of learning in the form of flipbook-based E-LKPD.

At the point of convenience question, 84% of students stated that the Flipbook-assisted E-LKPD on the material of analyzing the structure of scientific papers is easy to use. Although there are still those who answer otherwise. A total of 85% of learners stated that learning is more effective by utilizing technology as in this interactive E-LKPD. A total of 87% of learners stated that with the learning materials developed make learning more enjoyable.

There were no significant difficulties as long as students completed the learning activities, as evidenced by 66% of students experiencing no problems. This is supported by the role of the teacher who is very helpful in explaining how to use and work.

There are three activities or activities in the Flipbook-assisted E-LKPD on the material of analyzing the structure of scientific papers. Each activity lasts for 3 lesson hours in accordance with the Decree of the head of the Education Standards, Curriculum and Assessment Agency, Ministry of Education, Culture, Research and Technology Number 033/H/KR/2023 concerning the Second Amendment to the Decree of the Head of the Curriculum Standards and Education Assessment Agency of the Ministry of Education, Culture, Research and Technology Number 008/H/KR/2022 concerning Learning Outcomes in

Early Childhood Education, Primary Education, and Secondary Education in the Merdeka Curriculum.

The first activity, taking place at the first meeting with the theme I Know Scientific Work. In this activity, a general understanding of scientific writing is given. Three alternative understandings are provided in learning as well as the application of differentiated learning in the realm of content differentiation. The first content is an article which is then linked to the original article sourced from wikipedia.org. the second content is still in reading but reading an e-book whose pages have been adjusted. This e-book was downloaded from the ministry's SIBI. The third content is a YouTube video about the introduction of scientific work. Learners can click the image in activity-1 to connect to the e-book or YouTube video in question.

To understand students' basic knowledge, in this first meeting three student activities are provided, the first of which is writing words or phrases according to the alphabet of letters that connect to understanding words or phrases after understanding scientific work. The purpose of this activity is to determine the achievement of initial understanding, whether students have properly listened to the learning content, which is obtained by students after studying scientific writing material. The second activity is to find the meaning of vocabulary and write it in a denotation sentence. The purpose of this second activity is to lead learners to understand new words or word terms by opening KBBI online. So that learners are independently able to think critically by utilizing the available platforms for confirmation of understanding. In this first meeting, learners can send answers through the links connected in the google form.

In the second session, there are three activities with the core activity being group discussion. Learners in this second meeting will form groups and determine the title of scientific papers that will be discussed together. Various titles of scientific papers are provided. Learners can choose one of them by clicking the title to read the linked article in full. Learners are also allowed to choose other titles of scientific papers from the results of browsing independently. In the group activity, learners discuss and dissect the structure of scientific papers according to the outline provided. The outline provided is a blank outline that guides learners in understanding the structure of scientific papers. In the last activity of the second meeting, learners synthesize the concept of scientific work by filling in the table of text form, topic, connecting. In this second meeting, preparation for the presentation at the next meeting is also conveyed, learners will also present the results of their group discussions in the form of presentations. The presentation material may be based on the questions on the outline that have been answered.

The third meeting activity is presentation. There are two activities in this third meeting, namely presentation and feedback. Presentations are chosen sequentially from the group of learners who are presenting, the presentation time is about 20 minutes. Those who did not present had the task of filling in the feedback sheet. This activity is intended to avoid any lull in classroom activities and especially to fully engage students during the learning process.

Based on the three meetings with three main activities, learners preferred the third activity as the most enjoyable activity. The third activity was the group activity. The key factor contributing to this preference is the many benefits that can be obtained. The benefits are as follows.

1. Group activities provide opportunities for students to interact with peers, collaborate on tasks and share ideas. These social interactions can foster a sense of belonging, friendship and support among students, making the learning process more interesting and enjoyable for students.
2. Group work activities, students share responsibility for completing tasks and achieving common goals. This shared accountability can motivate students to

contribute their best efforts, learn from each other's strengths, and support each other's progress.

3. Group activities provide a platform for students to develop important teamwork and communication skills, such as active listening, effective communication, conflict resolution, and compromise. These skills are highly valued in both academic and professional settings.
4. Brainstorming and collaborating in groups can spark creativity and lead to innovative solutions to problems. Students can draw on each other's strengths and perspectives to generate new ideas and approaches that may not have emerged through individual work.
5. Group activities can facilitate peer learning, where students learn from each other by explaining concepts, providing feedback, and offering help. This peer support can be especially beneficial for students who struggle with certain concepts or need additional explanation.
6. Achieving goals and completing tasks together as a group can give students a strong sense of accomplishment and shared success. At this stage it is preparation for collaboration with the real world. Group work mirrors many real-world work scenarios, individuals collaborating with coworkers to achieve a common goal. By participating in group activities, students gain valuable experience in teamwork, communication, and collaboration that can prepare them for future professional endeavors.

In the confirmation question of students regarding the assistance of students in understanding scientific papers on the theme of nature conservation, 98.5% of students stated that they were helped by the E-LKPD assisted by this Flipbook. So that E-LKPD assisted by flipbpook on the material of analyzing the structure of scientific papers on the theme of nature conservation, is effectively used in learning classes. This level of practicality can be seen from the results of the student questionnaire which contains a response statement to the E-LKPD assisted by the flipbook developed.

Conclusion

This research produces a product of teaching materials for learner worksheets (E-LKPD) which is integrated with flipbook assistance so that it can be accessed using a device. Flipbook-assisted E-LKPD on the material of analyzing the structure of scientific papers in this study is used in Indonesian language learning. The results of E-LKPD validation are 82% declared feasible to use according to the material expert validator. The response of students on the effectiveness of E-LKPD assisted by flipbook on the material of analyzing the structure of scientific papers is 85.6% effective. A total of 98.5% of students stated that they were helped in understanding the structure of scientific papers on the theme of nature conservation. Recommendations: for teachers in implementing this learning, it is recommended (1) Before starting the learning, first introduce the E-LKPD through the guide page; (2) Provide clear instructions so that students do not feel confused. If necessary, explain step by step and introduce the tools in it; (3) Share the E-LKPD flipbook link in the class whatSapp group. Sharing the link can be done the day before the lesson. This is to attract students to surf first in understanding the shared E-LKPD.

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