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by Hansi Effendi

DEVELOPMENT OF DIGITAL-BASED PJOK SUBJECT TEACHBOOKS

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Abstract

This research aims to develop a digital-based PJOK textbook for class X students at SMK Negeri 1 Palembang. This research uses research and development research methods with the Borg and Gall model (data collection, product design, design validation, design revision, product trials, product revisions, usage trials, product revisions, and mass production). The subjects in this research were class X students at SMK Negeri 1 Palembang. Qualitative and quantitative data analysis techniques. This research was carried out at the development stage, namely large-scale trials. Validation of digital-based PJOK textbooks was carried out by material experts, language experts and media experts. The validation results obtained a material expert assessment of 4.8 while the language expert assessment was 4.16 and the media expert assessment was 4.7 with an average value of 4.55 from the expert validation results indicating that the book developed was in the valid or suitable category for use. . The development stage consists of evaluation, small group trials and large group trials. The results of group trials from the initial stage of trials carried out, the total score obtained was 3.47, this score places it in the very positive category and is suitable for use as teaching material in the PJOK learning process in class X vocational schools. Based on the main trial results, the total score obtained was 3.60, this score shows that the textbook is in the very positive category and is suitable for use as teaching material in PJOK subjects in class X vocational schools. Future research can test the effectiveness of digital-based PJOK textbooks so that the influence of digital textbooks can be known when used in PJOK learning.

Keywords: PJOK, Learning, Digital

INTRODUCTION

Education has an important role as a means that makes a significant contribution to the development of a nation and state in various sectors. As a dynamic force in the life of every individual, education has a broad impact, including on physical, intellectual, social and moral development. Learning is an obligation for everyone in forming a generation that has high competitiveness and is useful for our country (Ramadhana et al., 2021). The rapid development of science and technology (science and technology) makes everything easier and faster (Hartati et al., 2020).

In the learning process, textbooks have an important role, because they are able to provide support and reinforcement for the delivery of material delivered by the teacher. Textbooks are also a very vital resource in learning, because they can be used to explain various complex phenomena, including abstract concepts, in order to provide further information (Khamidah et al., 2019). Selecting and developing appropriate learning techniques can help convey messages accurately, effectively and efficiently, creating experiences. rich learning, describing events as well as possible, and improving student performance and skills. (Aryanti et al., 2018).

The results of initial observations carried out by researchers on class X students at SMKN 1 Palembang showed that most students were less interested in reading conventional textbooks. In general, in schools today, conventional printed textbooks remain the main source of learning for students (Tya Maya Ningrum et al., 2023). This happens because there are not many digital-based textbooks available that are valid and can provide maximum support to students in the learning process. It is not without reason why this happens, because it is one of the effects of the digitalization era and the impact of very rapid progress. Based on the observations made, it was also found that the reasons why students were less interested in reading conventional textbooks included the pictures in conventional textbooks which were still less attractive and there was no animation in the textbooks, as well as descriptions and explanations of the material contained in the textbooks. Conventional textbooks do not attract students' attention when reading conventional books, making students feel bored. Apart from that, conventional textbooks are difficult to carry due to their size and weight.

Teaching materials according to (Prastowo, 2018) are all materials (including information, equipment and text) that are arranged in a structured manner, comprehensively describing the skills that students will master and use during the learning process. (Muflikatun et al., 2021) Activities aimed at planning and implementing learning, such as textbooks, modules, documents, worksheets, models or simulations, audio teaching materials, and various other types of teaching

materials. In this realm, there are still many educators or instructors who continue to rely on conventional teaching materials, namely materials that can be used directly, purchased, instantly and easily, without any effort in planning, preparing or compiling them themselves, even though the facts and evidence show otherwise. Therefore, there is a big risk if the teaching materials used are not appropriate to the context, are less interesting, are monotonous, and do not meet students' needs. The types of teaching materials generally used include textbooks, textbooks funded by the government, and worksheets obtained through official sellers among schools.

Research related to the development of Digital-Based Textbooks has received support from research conducted by (Wijaya Kuswanto & Dinda Pratiwi, 2020) and (Yektyastuti & Ikhsan, 2016). The findings from this research state that the preparation of digital and Android-based teaching materials has high value. to be applied to support the learning process. The implication is that the use of digital-based textbooks can be effective in helping students understand the learning material they are studying. (Setyo et al., 2022)The use of digital textbooks is one aspect that can function as a reference for students and a source of material for educators to develop learning. Digital textbooks can act as an alternative media in implementing the teaching and learning process. According to (Sofyan & Listiawan, 2019) it is important to conduct research on interactive digital books because in implementing learning, certain elements are needed so that learning activities can run effectively and be directed. One of these components is the availability of teaching materials that can serve as study guides for students and educators.

Thus, it can be stated that the media acts as a means that can be used and utilized to trigger progress in various dimensions such as physical, motoric, social, cognitive, affective, creative, creation and language. This aims to stimulate and facilitate the teaching and learning process (Okilanda et al., 2018). Media can be created with a certain level of complexity and limited according to certain criteria, so that the media becomes a form of internal dialogue between information providers and information recipients. Teaching materials have a crucial role in

learning because they are able to provide support and strengthen the delivery of material provided by the teacher. Issues that arise in the implementation of the PJOK subject in Senior High Schools as mentioned need to be addressed through a study entitled "Development of a Digital-Based PJOK Subject Textbook for Class X Students of SMKN 1 Palembang".

METHOD

This research uses the Research and Development (R&D) method. The development steps using the Bord and Gall model according to (Sugiyono, 2019), there are ten stages, namely problem, data collection, product design, design validation, design revision, product trial, product revision, usage trial, product revision, production mass. This research uses quantitative and qualitative data analysis techniques. Quantitative data is shown in the management of validation and observation questionnaires as well as qualitative data based on input and suggestions from validation experts regarding product design. This research was conducted on 105 class X students of SMK Negeri 1 Palembang.

RESULT AND DISCUSSION

Result

Researchers conducted interviews with teachers who teach PJOK subjects at SMK Negeri 1 Palembang with the aim of understanding and identifying obstacles that may arise during the implementation of PJOK learning activities. Through this interview stage, researchers obtained relevant information regarding various obstacles that often arise during the learning process for PJOK subjects. From the results of interviews with PJOK teachers at SMK Negeri 1 Palembang, it appears that there is a need to produce digital PJOK textbooks as a learning resource for students. It is hoped that the development of the textbook will contain material that is in accordance with the curriculum used at SMK Negeri 1 Palembang, namely the independent curriculum.

Table 1. Analysis of Student Needs

Category	N	%
Using a smartphone in activities	93	88,5
Using a smartphone for more than 5 hours	57	54,3
Agree that smartphones can be used as a learning resource	105	100
The textbooks used are in printed form	86	81,9
The textbooks used are in accordance with the curriculum	97	92,4
The weakness of textbooks is that they are difficult to carry anywhere	62	59,4
Want an interactive textbook	51	48,6

At the needs analysis stage, it was found that 88.5% of respondents used smartphones in their daily activities, and 54.3% of them used smartphones for more than 5 hours per day. The findings at this stage were that all respondents answered that smartphones could be used as a learning resource. Apart from that, it was also found that the textbooks used in schools were still in printed form which was difficult to carry anywhere. It was also found that students want books that are interactive and easy to access anytime and anywhere.

Then the researcher carried out three expert validation steps, namely material validation, language validation, and media validation with the following results;

Table 2. Average validator research results

Validation	Assessment Results	Category
Material validation	4,8	Highly valid
Language validation	4,16	Highly valid
Media validation	4,7	Highly valid
Average	4,55	Highly valid

Based on the data in Table 4.5 above, it can be concluded that the average validator assessment of the textbooks being developed is 4.55, which is in the very valid category. These results show that the digital-based PJOK textbook that has been developed can be used with minor revisions and is ready for further testing.

Subsequently, the researcher conducted an initial trial of the PJOK textbook with 35 tenth-grade students at SMK Negeri 1 Palembang. For each descriptor in the assessment criteria, there were four rating options: strongly agree with a score of 4, agree with a score of 3, disagree with a score of 2, and strongly disagree with a score of 1.

Tabel 3. Early stage trials

No.	Aspect	Indicator	Average
1	Attractiveness	Display of PJOK Subject Textbooks Digital based is interesting	3,30
		Image colors used in textbooks Digital-Based PJOK Subjects in accordance with fact	3,53
		The image quality in this Digital-Based PJOK Subject Textbook is clear	3,61
		The writing in the Digital-Based PJOK Subject Textbook is clear and easy to understand.	3,36
2	Convenience	Ease of use of digital-based PJOK subject textbooks	3,58
		The use of language in the Digital-Based PJOK Subject Textbook is easy to understand	3,47
		The material in the Digital-Based PJOK Subject Textbook is easy to understand	3,47
		Digital-based PJOK textbooks are easy to carry anywhere.	3,58
		The existence of digital-based PJOK subject textbooks helps carry out the learning process.	3,42
3	Helpfulness	There is no doubt about the truth of the contents of the material	3,28
		Digital-based PJOK textbooks represent students' learning styles, especially during online learning.	3,64

Based on the results of the initial trials carried out, the total score obtained was 3.47, this score places it in the very positive category and is suitable for use as teaching material in the PJOK learning process in class X vocational schools. However, there is still a remaining questionnaire answer score of 0.53, which shows that there are still several shortcomings in making digital-based PJOK Class X textbooks. Therefore, researchers will revise the textbook to improve its quality.

Then the researchers conducted a main trial involving 70 Class X students at SMK Negeri 1 Palembang. Researchers asked respondents to provide responses to questions on the research instrument related to the level of practicality of digital-based Physical Education Textbooks. From the results of the main trial of the PJOK Subject Textbook by 70 Class X students at SMK Negeri 1 Palembang.

Before	After

Figure 1. Book before and after revision

Table 4. Main Trials

No.	Aspect	Indicator	Average
1	Attractiveness	The appearance of the digital-based PJOK textbook is interesting	3,65
		Image colors used in the Eye Textbook Digital-based PJOK lessons are based on facts	3,56
		The image quality in this Digital-Based PJOK Subject Textbook is clear	3,65
		The writing in the Digital-Based PJOK Subject Textbook is clear and easy to understand.	3,51
		Ease of use of Digital-Based PJOK Subject Textbooks	3,61
2	Convenience	The use of language in the Digital-Based PJOK Subject Textbook is easy to understand	3,57
		The material in the Digital-Based PJOK Subject Textbook is easy to understand	3,58
		Digital-based PJOK textbooks are easy to carry anywhere.	3,72
3	Helpfulness	The existence of digital-based PJOK textbooks helps carry out the learning process	3,60
		There is no doubt about the truth of the contents of the material	3,46
		Digital-based PJOK textbooks represent students' learning styles, especially during the online learning era.	3,65
		Final Average	3,60

Based on the results of the main trial, the total score obtained was 3.60, this score shows that the textbook is in the very positive category and is suitable for use as teaching material in PJOK subjects in class X vocational schools. However, there is still a remaining questionnaire answer score of 0.40, which shows that there are still several shortcomings in making digital-based textbooks. Therefore, researchers will revise the textbook to improve its quality.

Figure 2. Book before and after revision

Discussion

The product of this development produces digital-based PJOK textbooks that are valid, easy to use, and effective in improving student learning outcomes. This research was conducted at SMKN 1 Palembang with research subjects of 105 students. The initial product development stage resulted in a digital-based prototype of the PJOK subject textbook which was in accordance with previous planning. The product developed can be accessed via the link https://anggarsetiabudi.cloud/ where in the product developed there are 9 main PJOK learning materials in accordance with the independent curriculum, each chapter contains teaching material, assessment, practice questions, as well as discussions and reflections. The follow-up to this stage is to carry out a validity test on the product being developed. There are 3 aspects tested, namely media, material and language. From the results of the validity test carried out by 3 experts, the average result was 4.56 in the very valid category.

Products that have been declared valid are then carried out in the initial stage of testing with practicality tests in small groups with 35 subjects. The findings of the results at this stage are that the product being developed can be accepted by students who are assessed by the practicality questionnaire with a score of 3.47 out of 5, where there are still 0.53 that do not meet it and will be revised. Revisions were made to aspects of the writing and cover of the book. After the revisions were carried out, it continued with main trials and operational trials.

The next trial phase was carried out in a large group with a total of 70 students as subjects. At this stage, a practicality test is carried out through a practicality questionnaire and an effectiveness test is carried out through questions using pre-test and post-test. The practicality test at this stage is aimed at reviewing whether the revised product has improved from the previous one or not. The results of this practicality test were 3.60 in the very good category. Interactive digital teaching materials allow students to more actively observe concepts that may be abstract to them (Bagaskara et al., 2022). Then research conducted by (Anty, 2023; Budi et al., 2024; Rozalini et al., 2023; Wijaya Kuswanto & Dinda Pratiwi, 2020); strengthens the results that the use of digital textbooks in PJOK subjects can increase student learning outcomes.

CONCLUSION

By referring to data and discussions from research into the development of a digital-based Physical Education Textbook for Class X students at SMK Negeri 1 Palembang, it can be concluded that:

1. The digital-based PJOK textbook developed for tenth-grade students at SMKN 1 Palembang was declared valid for use with an average score of 4.56, interpreted as being in the "very valid" category.

2. The digital-based PJOK textbook developed for tenth-grade students at SMKN 1 Palembang was assessed as practical with an average score of 4.60, interpreted as being in the "very good" category.

3. The effectiveness of the digital-based PJOK textbook for tenth-grade students at SMK Negeri 1 Palembang was found to be effective with an N-gain score of 0.63, which falls into the "moderate" category.

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