



Image-Based Textbook About ASEAN Countries with the Integration of Qr-Code Technology in Social Science Content

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ABSTRAK

Kurangnya buku ajar yang digunakan disekolah menjadi salah satu penyebab kesulitan belajar pada siswa. Adapun tujuan dari penelitian pengembangan ini ialah menciptakan buku ajar berbasis gambar tentang negara-negara ASEAN dengan integrasi teknologi QR-Code pada muatan pelajaran IPS untuk siswa kelas VI sekolah dasar. Penelitian dan pengembangan ini menggunakan model pengembangan Dick & Carey. Subjek penelitian yaitu ahli desain, ahli materi, guru dan siswa. Metode pengumpulan data dengan angket. Teknik analisis data menggunakan teknik analisis deskriptif kuantitatif dan kualitatif. Hasil uji validasi ahli desain dan materi dengan kategori valid. Uji kepraktisan menunjukkan hasil sangat praktis dan uji kemenarikan diperoleh produk sangat menarik. Hasil pengembangan masuk kedalam kriteria efektif dikarenakan hasil belajar siswa meningkat dari pretest mengalami peningkatan saat posttest. Sehingga, pembelajaran menggunakan buku ajar berbasis gambar tentang negara-negara ASEAN dengan integrasi QR-Code lebih efektif serta meningkatkan hasil belajar siswa dibandingkan tidak menggunakan buku ajar. Simpulan penelitian menunjukkan buku ajar berbasis gambar tentang negara-negara ASEAN dengan integrasi QR-Code kelas VI Sekolah Dasar layak dan valid digunakan dalam proses pembelajaran. Implikasi penelitian ini guru dapat menggunakan buku ajar berbasis gambar tentang negara-negara ASEAN dengan integrasi QR-Code ini sebagai buku penunjang pembelajaran IPS kelas VI Sekolah Dasar

ABSTRACT

The need for textbooks used in schools is one of the causes of learning difficulties among students. This development research aims to create picture-based textbooks about ASEAN countries with the integration of QR-Code technology in social studies content for sixth-grade elementary school students. This research and development uses the Dick & Carey development model. Research subjects are design experts, material experts, teachers, and students. Data collection method using questionnaires. The data analysis technique uses quantitative and qualitative descriptive analysis techniques. The design and material expert validation test results are in the valid category. The practicality test showed very practical results, and the attractiveness test obtained a very attractive product. The development results are included in the effective criteria because student learning outcomes increased from the pretest to an increase during the posttest. Thus, learning using picture-based textbooks about ASEAN countries with QR-Code integration is more effective and improves student learning outcomes compared to not using textbooks. The research conclusions show that picture-based textbooks about ASEAN countries with QR-Code integration for class VI elementary schools are feasible and valid for learning. This research implies that teachers can use picture-based textbooks about ASEAN countries with QR-Code integration to support social studies learning for class VI elementary schools.

1. INTRODUCTION

Education is a very essential factor in advancing a nation and state. It is through education that a brilliant and quality nation will be created. Social Sciences or what is often referred to as Social Sciences is one of the subjects included in the curriculum (Meldina et al., 2020; Tombokan, 2022). At the elementary school level, social studies content contains natural appearances, the condition of society, and other countries in the world, and includes various kinds of important events that have occurred in the past over

a long time (Suryaningsih & Ainun Nisa, 2021; Syafari & Montessori, 2020). The organization of social studies material in elementary schools applies an integrated approach, which means that the material that has been developed and compiled does not refer to scientific disciplines but rather to aspects of students' real lives adjusted to their age characteristics, level of thinking development, and behavioral habits (Alfianti et al., 2020; Kusumaningrum et al., 2014). The implementation of the learning process in schools aims to develop all the potential possessed by students, including potential in the cognitive, affective and psychomotor aspects. Success in the learning process is influenced by the teacher's ability to use learning strategies and resources (Saragi & Tegeh, 2022; Wero et al., 2021). Effective learning can occur if a teacher can utilize sources and media that are adapted to curriculum demands.

However, the ongoing COVID-19 pandemic requires teaching staff to be more creative in delivering learning material so that students always understand the material that has been provided (Haryadi & Selviani, 2021; Nurcholis & Istiningsih, 2021). Online learning is appropriate to local situations and conditions to create effective and comfortable learning for students during the COVID-19 pandemic (Adi et al., 2021; Zhang et al., 2020). Meanwhile, offline learning can be done without being connected to an internet network or using media such as radio, television, or face-to-face. Distance learning raises various problems. The problem during online learning is that teachers have difficulty controlling and maintaining the learning atmosphere because they are limited in virtual space, the concentration and motivation of children studying from home and at school will certainly be different, and students feel bored for too long without meeting the teacher and their friends, not all students have learning support facilities such as cellphones or laptops, the lack of knowledge of teachers, students, and parents regarding the use of technology, and other problems that occur in the assessment process and the opportunity to get a job after graduating from education (Anugrahana, 2020; Cahyani et al., 2020; Siahaan, 2020). So in this case it is very necessary to have various innovations from teachers by utilizing computer technology so that effective learning can still be created even though students are learning from home. Teachers as educators and also as facilitators play a very important role in providing students with an understanding of the problems they face in learning.

The solution to make it easier for teachers to direct students requires innovative teaching materials to support learning activities that prioritize students' learning experiences, not just explanations. Efforts that a teacher can make are by developing teaching materials that can be used as supporting books or companions to thematic books that have been provided by the government. Books are teaching materials that are very essential in the world of education. The function of books is as the main interpreter of the goals of education and as a way to improve the quality of education, because of its many benefits, providing a perspective for students in developing knowledge and thinking that is adapted to student development (Gustiawati et al., 2020; Mutiara et al., 2022). Textbooks are books that contain knowledge that has been analyzed and adapted to the applicable curriculum (Dewanti & Yasmita, 2022; Libiawati et al., 2020). Textbooks that have been provided by the government can be developed by teachers, however, due to the lack of experience and knowledge that teachers have in developing textbooks that suit students' characteristics and needs. QR-Code is a feature in the form of a two-dimensional image, this feature can translate stored data at high speed when integrated into observing and collecting information activities (Savitri et al., 2021; Turnip & Wijayaningsih, 2022). This feature is believed to be able to broaden students' learning experiences and can increase students' interest in learning, activeness, and learning motivation (Savitri et al., 2021; Winarni & Purwandari, 2020). The QR-Code function is a form of implementation of the 21st-century learning paradigm shift which demands the integration of technology and information into learning and answers the challenges of technological disruption inherent in the 4.0 revolution era (Ardiansyah & Nana, 2020; Khomarudin & Efriyanti, 2018).

Previous research findings stated that the use of the QR-Code feature in printed educational materials tends to increase students' interest and clarity in textbooks (Savitri et al., 2021; Turnip & Wijayaningsih, 2022). Interactive teaching materials to improve understanding of mathematical concepts in class X high school students (Nurhairunnisah & Sujarwo, 2018; Vince & Muhtadi, 2019). Textbooks based on problem-based learning in elementary schools are suitable and valid to use (Devirita et al., 2021; Lestari et al., 2021). Many developments related to textbooks have been carried out. The difference in this research is the development of a QR-Code technology integration textbook. This research aims to create an image-based textbook about ASEAN countries with the integration of QR-Code technology into social studies content for sixth-grade elementary school students. It is hoped that this textbook can be used as the main supporting book and as a reference in developing textbooks on themes/classes/regions, and to practice various questions so that students do not get bored easily when working on them.

2. METHOD

This research is included in the type of research and development by producing a product in the form of a textbook. This research and development of image-based textbooks about ASEAN countries applies the development model by Dick & Carey. In the Dick & Carey development model there are ten stages carried out to carry out development. These stages are the stage of identifying learning objectives, analyzing, the stage of analyzing students and the environment, the stage of designing a specific objective formulation, the stage of developing assessment instruments, the stage of developing strategies, the stage of developing and selecting materials, the stage of designing and carrying out formative evaluation, revising, designing stage, and conducting summative evaluation.

The initial stage of the product development process is preliminary research. Preliminary study activities before making a product development plan. The products that have been developed are then validated by material and design expert validators. Based on the results of the validator in the form of a validity score for the product produced, suggestions and input are used as a basis for improving the product before it is used in the field. After the product has been revised, it is then tested in small groups. This trial activity is carried out in small groups to find out how attractive a product that has been developed is. After small group testing, the product was revised again based on feedback and suggestions from students. The results of the revisions were tested on research subjects, in this case, students, over approximately four meetings. Field tests are intended to assess the level of practicality, attractiveness, and effectiveness of a product that has been developed. The practicality of the product is obtained through the results obtained from the percentage of the average number of response questionnaires from teachers and students, while the effectiveness is obtained from the average results of the pretest and posttest scores. The results obtained will then be compared with the KKM that the school has set, namely ≥ 70 . In data management, there are two descriptive analysis techniques, quantitative and qualitative which are used as data analysis techniques. Data obtained from the results of the validator questionnaire, and teacher and student responses will be analyzed quantitatively descriptively. Meanwhile, the data produced in the form of feedback and responses from validators and test subjects will be analyzed descriptively and qualitatively.

3. RESULT AND DISCUSSION

Result

This research and development will produce a product in the form of an image-based textbook with QR-code integration. This textbook contains a description of the material and a series of activities carried out by students during learning on the Bumiku theme. The presentation of product trial data is obtained from expert validation test data, small group trials, and field trials. Validity level data is part of the initial stage which is carried out after the textbook product being developed has been completed. This expert validation is carried out to obtain the validity of the data related to the textbooks that have been developed. The expert validation data obtained by researchers includes material expert validators and media experts. The validity test of image-based textbooks about ASEAN countries with QR-Code integration was carried out by experts in their field. Experts who carry out validation are design experts and material experts. Design expert validation aims to evaluate the design/appearance of textbooks. Material expert validation aims to evaluate the suitability of the material to the textbook theme. A recapitulation of the validation results from design experts and material experts can be seen in [Table 1](#).

Table 1. Recapitulation of Expert Validation Results

| Validation | Percentage | Maximum Percentage | Information |
|---|------------|--------------------|-------------|
| Design Expert | 82.6 % | 100% | Valid |
| Materials Expert | 82.5 % | 100% | Valid |
| Percentage of total gain | 165.1 % | 200% | |
| Average percentage/ Product Validity Criteria | 82.55 % | | Valid |

Based on [Table 1](#), shows that the results of the recapitulation of design and material experts' validation of textbooks obtained a total percentage of 165.1% with an average percentage of 82.55%. From the calculation results of the recapitulation of design and material validation results, it can be concluded that the criteria for image-based textbooks about ASEAN countries with QR-Code integration are valid and suitable for use in class VI social studies learning. Analysis of textbook practicality tests was obtained from the results of questionnaires during small group trials and field trials. The results of the practicality test recapitulation are presented in [Table 2](#).

Table 2. Practicality Test Recapitulation Results

| Data source | | Percentage | Maximum Percentage | Information |
|---------------------------|---------|-----------------|--------------------|-----------------------|
| Small Group Trial | Student | 90.47 % | 100% | Very Practical |
| Field Trials | Teacher | 90.90 % | 100% | Very Practical |
| | Student | 90.85 % | 100% | Very Practical |
| Amount | | 272.22 % | 300 % | |
| Average percentage | | 90.74 % | | Very Practical |

Based on [Table 2](#), it shows that the average result of recapitulation of practicality tests on textbooks is 90.74%. The average results are in the practicality scale range of 85.01% -100%. This scale shows that image-based textbooks about ASEAN countries with QR-code integration are very practical and suitable for use in learning. Analysis of practicality tests in textbooks was obtained from the results of questionnaires when small group trials and also field trials were carried out. The results of the practicality test recapitulation are presented in [Table 3](#).

Table 3. Recapitulation Results of the Attractiveness Level Test

| Data source | | Percentage | Maximum Percentage | Information |
|---------------------------|---------|-----------------|--------------------|-------------------------|
| Small Group Trial | Student | 92 % | 100% | Very interesting |
| Field Trials | Teacher | 85 % | 100% | Very interesting |
| | Student | 91.77 % | 100% | Very interesting |
| Amount | | 268.77 % | 300 % | |
| Average percentage | | 89.59 % | | Very interesting |

Based on [Table 3](#), it shows that the average result of recapitulation of practicality tests on textbooks is 89.59%. The average results are in the practicality scale range of 85.01% -100%. This scale shows that picture-based textbooks about ASEAN countries with QR-Code integration are very interesting and also suitable for use in learning activities. This data analysis was obtained through the results of the pretest and also the results of the posttest that were carried out by the students. This pretest was given before learning activities using picture-based textbooks about ASEAN countries with QR-Code integration and the posttest was given after using picture-based textbooks about ASEAN countries with QR-Code integration. The data from the pretest and posttest results have been presented at the data presentation stage. Textbook products image-based images of ASEAN countries with QR-Code integration have been effective, because the average score is between 70.01% - 85.00%, while for the N-Gain score, the score is 0.72, where the score is in the high category. Based on these calculations, it shows that there is a difference between students' knowledge before using textbooks and after students use textbooks. This means that learning using picture-based textbooks about ASEAN countries with QR-Code integration is more effective and improves student learning outcomes compared to not using textbooks. The display of an image-based textbook about ASEAN countries with QR-Code integration and the testing process is presented in [Figure 1](#).



Figure 1. Product Display and Field Trial Learning Process

Discussion

The product produced through this research and development is an image-based textbook about ASEAN countries with QR-Code integration for class VI students at SDN 1 Argoyuwono. The research results show that learning using picture-based textbooks about ASEAN countries with QR-Code integration is more effective and improves student learning outcomes compared to not using textbooks. This is seen from several aspects. The first, textbooks are suitable for use because they are appropriate to the material. This textbook consists of learning activities, material, and questions that will be studied and completed by students (Dita et al., 2021; Raditya & Iskandar, 2020). The textbook that has been developed is tailored to the needs of class VI students at SDN 1 Argoyuwono. The material in this textbook has been adapted to basic competencies, namely identifying geographical characteristics and socio-cultural, economic, and political life in the ASEAN region. The aim of selecting this material is to make it easy for students to understand the learning material and be able to relate it to the surrounding environmental conditions so that learning is more meaningful (Martati, 2020; Sari & Atmojo, 2021). This textbook product was reviewed based on test results for validity, practicality, attractiveness, and effectiveness. A book can be said to be of quality if it meets the aspects of validity, practicality, and effectiveness.

The second, picture-based textbooks about ASEAN countries with QR-Code integration are suitable for use in social studies learning. The components measured for the validity of textbooks are presentation, language, and content components. Standards in writing textbooks consist of the appropriateness of content, presentation, and language (Putra & Nurafni, 2021; Wardani & Suniasih, 2022). All of these components have been included in the validity questionnaire so that the textbook is following the established standards. Apart from that, the component in the validity questionnaire also relates to the competencies that must be achieved following the 2013 curriculum. Based on the results of expert validation, the material is also related to the competencies to be achieved in the 2013 curriculum. Three principles must be considered when compiling teaching materials, among them are the principles of relevance, consistency and sufficiency (Harahap & Abidin, 2021; Suniasih, 2019). Textbooks are included in the criteria of being very interesting. Thus, this image-based textbook about ASEAN countries with QR-Code integration is suitable for use in social studies learning. Indicators of the attractiveness of textbooks are the pictures and displays contained in picture-based textbooks about ASEAN countries with QR-code integration. These indicators are to measure the level of attractiveness of textbook products. The attractiveness of textbooks is one of the characteristics that must be present in the preparation of teaching materials. One of the characteristics of teaching materials is that they must be interesting to get students' attention (Aryawan et al., 2018; Widiastuti, 2021).

The third, textbooks are included in the very practical criteria. Thus, this image-based textbook about ASEAN countries with QR-Code integration is suitable for use in social studies learning. The practicality of this textbook is due to its ease of use which can be seen from the instructions for use and learning activities contained in it. Practicality criteria are not only practical for teachers but also practical for students. Textbooks are all forms that teachers can use to facilitate the implementation of learning in the classroom. One of the aims of preparing textbooks is to make it easier for students to learn a particular competency (Ahdan et al., 2020; Raditya & Iskandar, 2020). Compiling a textbook pays attention to the signs in making a book that can influence the quality of a textbook (Puspasari & Suryaningsih, 2019; Zahrotissa'adah & Sulistyowati, 2021). Making textbooks must at least meet textbook content standards, and pay attention to the use of language and writing fonts that are appropriate for students to achieve standards for using quality textbooks. Therefore, the product developed is designed to be as easy as possible to use in learning. Based on these criteria, the content of image-based textbooks about ASEAN countries with QR-Code integration is suitable for use in learning.

This finding is strengthened by previous research findings stating that interactive teaching materials can improve the understanding of mathematical concepts in class X high school students (Nurhairunnisah & Sujarwo, 2018; Vince & Muhtadi, 2019). Textbooks based on problem-based learning in elementary schools are suitable and valid to use (Devirita et al., 2021; Lestari et al., 2021). Based on the development results, this textbook has several advantages and disadvantages. The advantages of this textbook are (it has a high level of validity, attractiveness, practicality, and effectiveness, this textbook has instructions for use for each stage of learning, making it easier for students and teachers to learn, this textbook is equipped with concrete pictures and full color to reinforce each learning material, this textbook can be used as the main supporting book and as a reference in developing textbooks on themes/classes/regions, and practice questions that are varied so that students do not get bored easily when working. Weaknesses of textbooks this means that the material developed is limited to social studies content with the theme of *Bumiku* and the distribution of products is still limited to the school environment. The implication of this research is that teachers can use picture-based textbooks about ASEAN countries

with QR-Code integration as supporting books for class VI social studies learning in schools. Elementary, especially at SDN 1 Argoyuwono.

4. CONCLUSION

This research produces a product in the form of an image-based textbook about ASEAN countries with QR-Code integration for class VI elementary schools. The results show that the textbook created for this research is suitable for use in learning activities because this textbook has been categorized as valid, practical, interesting and effective so that it can be used by teachers in classroom learning activities. It can be concluded that this development research is effective for use in classroom learning activities. This picture-based textbook about ASEAN countries with QR-Code integration is a support book for social studies learning for class VI elementary schools, especially at SDN 1 Argoyuwono. However, it does not rule out the possibility that teachers and students use other more relevant source books. The more resource books you study, the more knowledge you will gain.

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