E-Book: Innovative Digital Learning Media For Social Science Lessons For Fifth-Grade Elementary School

Ni Kadek Rita Aristiani[1*], Anak Agung Gede Agung[2] iD

[1,2] Jurusan Ilmu Pendidikan, Universitas Pendidikan Ganesha, Singaraja, Indonesia

A R T I C L E   I N F O

A B S T R A K

Rendahnya minat serta hasil belajar IPS siswa kelas V, disebabkan karena kurangnya penggunaan media. Sehingga tujuan dari penelitian ini yakni untuk mengembangkan E-Book berbasis Problem Based Learning muatan pelajaran IPS kelas V SD. Penelitian ini tergolong kedalam jenis penelitian pengembangan yang dikembangkan dengan menggunakan model ADDIE. Subjek yang terlibat dalam penelitian ini yakni 4 orang ahli dan 9 siswa kelas V SD. Pengumpulan data dalam penelitian dilakukan menggunakan metode wawancara, kuesioner/angket dan tes, dengan instrument penelitian berupa lembar kuesioner dan tes pilihan gandan (objektif). Data yang diperoleh dalam penelitian ini kemudian dianalisis dengan menggunakan teknik analisis deskriptif kuantitatif dan teknik analisis statistik inferensial. Hasil analisis penelitian menunjukkan bahwa hasil uji validitas menurut ahli isi/materi pelajaran memperoleh skor 91,67% dengan kualifikasi sangat baik, ahli desain instruksional memperoleh skor 88,6% dengan kualifikasi baik, ahli media pembelajaran memperoleh skor 90% dengan kualifikasi sangat baik, uji coba perorangan memperoleh skor 97,5% dengan kualifikasi sangat baik, dan uji kelompok kecil memperoleh skor 92,2% dengan kualifikasi sangat baik. Hasil uji efektivitas yaitu terdapat perbedaan yang signifikan sebelum dan sesudah menggunakan E-Book. Berdasarkan hasil analisis penelitian tersebut maka dapat disimpulkan bahwa media pembelajaran berupa E-Book berbasis Problem Based Learning pada muatan pelajaran IPS kelas V SD layak untuk dikembangkan dan dibelajarkan, karena mampu meningkatkan hasil belajar siswa.

A B S T R A C T

The low interest and social studies learning outcomes of fifth-grade students are due to the need for more media use. So that the purpose of this study is to develop an E-Book based on Problem-Based Learning social studies class V elementary school content. This research belongs to the type of development research that was developed using the ADDIE model. The subjects involved in this study were four experts and nine fifth-grade elementary school students. Data collection in the study was carried out using interviews, questionnaires/questions, and tests, with research instruments in the form of questionnaires and multiple-choice tests (objective). The data obtained in this study were then analyzed using quantitative descriptive and inferential statistical analysis techniques. The results of the research analysis showed that the validity test results according to content/subject matter experts scored 91.67% with very good qualifications, instructional design experts scored 88.6% with good qualifications, and learning media experts scored 90% with very good qualifications. The individual trials scored 97.5% with very good qualifications. The small group trials obtained a score of 92.2% with very good qualifications—the effectiveness test results show significant differences before and after using the E-Book. Based on the research analysis results, the learning media in the form of E-Books based on Problem-Based Learning in social studies class V SD is feasible to develop and teach because it can improve student learning outcomes.

1. INTRODUCTION

The concept of education built in the era of the industrial revolution 4.0 is digitalization and computerization. Technological developments have changed learning orientation from conventional to digital (Afif, 2019; Andriyani, 2018). This change is in line with the integration of learning strategies with

Corresponding author
*E-mail addresses: rita222@gmail.com (Ni Kadek Rita Aristiani)

Information and Communication Technology or ICT (Aslan, 2019; Hamdani, 2021). Education is a conscious process and effort to increase knowledge as a provision for future knowledge, applied through teaching, training, and research processes (Pane & Dasopang, 2017; Sujana, 2019). The purpose of education is to develop the potential that exists in a person. In this case, the challenges of the 21st century are often associated with 4C (Communication, Collaboration, Critical Thinking, and Creativity), so development is needed related to communication skills, collaborating with various parties, critical thinking skills, and high creativity (Fatmawati & Sholikin, 2019; Triyanto, 2020). The development of 21st-century learning encourages various parties. Students and teachers must have the ability and skills in the field of technology in the learning process (Susilo & Sarkowi, 2018; Widiastuti, 2021).

21st-century skills help teachers and students to think critically, collaborate, and adapt to all developments in learning subjects in Indonesia, including social science subjects (Sole & Anggraeni, 2018; Widodo et al., 2020). Social science is a scientific discipline that studies human and environmental life and social issues, which aims to develop and equip students with the knowledge, attitudes, values, and social issues (Abriyanti, 2022; Andari et al., 2019; Jacub et al., 2020). In line with this, social science is also defined as a subject or field of study which is a fusion (fusion) and integration of the social sciences, which are packaged with simple, interesting, easy-to-understand, and learned material for instructional purposes in schools (Puspitasari, 2016; Sulfemi & Mayasari, 2019). Social science learning aims to develop and equip students with knowledge, attitudes, values, and social issues (Ariyani & Kristin, 2021; Nurafni & Putri, 2021). Through the implementation of social science learning, students are expected to be able to increase their sensitivity to various social problems that arise in the community so that later, students will be able to find solutions to various existing problems (Kanti et al., 2018; Umbara et al., 2020; Wahyuni et al., 2018).

It is just that the reality on the ground shows that not all students can understand social science learning material well. The results of observations made at SD No. 1 Mengwi show that social studies content at SD No. 1 Mengwi is difficult for students to understand because of its diversity. The development of social science education is directed at developing competencies related to intellectual aspects, skills in finding, selecting, processing, and using the information to empower oneself, and skills in working with diverse groups to participate actively in the global era. Another learning problem is that students still need to be corrected and concentrate more on understanding the material presented by the teacher. Due to the limited variety of interactive learning media owned by the teacher in the learning process of social sciences, students need more media to understand the material clearly, and previously used media was felt less effective and efficient. If left unchecked continuously, problems that arise in learning social sciences will impact low student learning outcomes, and the objectives of learning social sciences are not achieved.

One of the efforts that can be made to overcome these problems is by using creative and innovative learning media. In the current era of globalization, learning media is focused on technological adaptation, such as utilizing interactive multimedia in the form of e-books. E-Book or Electronic Book is a set of interactive learning media in digital (electronic) and non-printed form that is used as a source of information that is systematically designed and packaged in the form of a file in the form of a link that is accessed via a browser (Azmanita & Festiyed, 2019; Khoirunnisa et al., 2020; Simamora et al., 2022). E-Books can function as alternative media sources of digital information, including materials, methods, and quizzes/tests featuring pictures, videos, and animations so students can understand the material clearly (Novitasari et al., 2019; Wilyanti et al., 2021; Zakiah et al., 2021). The Problem-Based Learning learning model can accompany the application of e-books as a learning media.

Problem-based learning uses problems as teaching materials (Emrisena et al., 2018; Handayani & Koeswanti, 2021). The Problem-Based Learning model is the starting point for learning based on real-life problems. From these problems, students are stimulated to be able to think critically in problem-solving skills and make students able to solve problems to find solutions (Hendriana, 2018; Safithri et al., 2021; Septiani et al., 2020). This PBL learning model is very suitable for use in social science lesson content because there is compatibility between the social science lesson content and the learning model, namely both studying and understanding problems in the learning process and stimulating students to think critically to find solutions to problems (Amin, 2020; Siddiq et al., 2020; Widyaswati et al., 2022). Furthermore, Problem-Based Learning learning strategies in E-Books will be able to attract and increase students' creativity and understanding of the material presented.

Several studies have previously revealed that E-Book learning media is highly feasible and suitable for social science lesson content (Puspita et al., 2021). The results of other studies revealed that the product of E-book-Based Teaching Materials is feasible to be used in social science learning in the fourth grade of elementary school (Nurjamilah, 2022). The results of subsequent research also revealed that e-book learning media is not only suitable for use by elementary school students and teaching

students because it has a practical design and is easy to use (Nasution et al., 2021). Based on some of the results of these studies, e-book media is a suitable medium for use in the learning process. In previous studies, there have been no studies specifically developing e-book media based on problem-based learning models in social science learning for fifth-grade elementary school students. So this research is focused on this study to develop an E-Book based on Problem-Based Learning social science lesson content for fifth-grade elementary school.

2. METHOD

This research belongs to the type of development research (Research and Development) which is carried out to develop and produce products in the form of materials, media, tools, and learning strategies used to meet learning needs and improve learning in the classroom, which is then tested to produce a product that has tested its effectiveness and not to test the theory. This research was developed using the ADDIE model, with five stages of development consisting of analysis (Analyze), design (Design), development (Development), implementation (Implementation), and evaluation (Evaluation). The subjects involved in this study were four experts: one design expert, one social science content/subject matter expert, one instructional design expert, and one instructional media expert. Meanwhile, the subject stage of the product trial in the individual trial involved three fifth-grade elementary school students, namely students with high, medium, and low social science learning outcomes. The small group trial involved nine students divided into three groups, each consisting of 3 students. The division of groups is carried out according to the results of learning social science students. The first group has high social science learning outcomes, the second group has moderate social science learning outcomes, and the third group has low social science learning outcomes.

Data collection in this study was carried out using interviews, questionnaires, and tests. In this study, a closed-type questionnaire was used. Closed questionnaires are instruments that have available answer items so that respondents only answer with the answer choices that have been provided. The instruments used to collect data in this development research were questionnaires and written tests. This study used a questionnaire to collect review data from experts and students. Questionnaires are useful for collecting data related to the validity of the products being developed. While the written test is used when testing effectiveness. Multiple choice test questions (objective) are used to measure students' knowledge before and after using the E-Book. The instrument grids in this study are presented in Table 1, Table 2, Table 3, and Table 4.

Table 1. Content/Learning Material Expert Instrument Grid

No	Aspect	Indicator	Item Number	Total Item
1.	Curriculum	Material suitability with basic competence.	1	3
		Material suitability with indicators.	2	
		Material suitability with learning objectives.	3	
2.	Material	Material suitability with student characteristics.	4	7
		Material depth.	5	
		The right media support the material.	6	
		The material is easy to understand.	7	
		The material represents real life.	8	
		Provides another resource for learning.	9	
		Appropriate and consistent use of language.	10	
3.	Evaluation	Appropriateness of evaluation with the material.	11	2
		Appropriateness of the level of difficulty of the questions with student competence	12	
		Total		**12**

Table 2. Instructional Design Expert Instrument Grid

No	Aspect	Indicator	Item Number	Total Item
1.	Purpose	Clarity of learning objectives	1	2
		Consistency between objectives, materials, and evaluation	2	
2.	Strategy	Systematic delivery of material	3	4
		Can motivate students	4	
		Give attention	5	

No	Aspect	Indicator	Item Number	Total Item
		Provide opportunities for students to learn independently	6	
3.	Evaluation	Provide evaluation questions to test student understanding.	7	2
		The questions presented follow the learning indicators	8	
		Total		**8**

Table 3. Grid of Learning Media Expert Instruments

No	Aspect	Indicator	Item Number	Total Item
1.	Technical	Ease of using media	1	3
		Media can help students understand the material	2	
		Media can generate student motivation	3	
2.	Appearance	Good display quality	4	2
		The screen display is harmonious and balanced	5	
3.	Text	Correct use of fonts	6	3
		Correct use of font size	7	
		Accurate use of text spacing	8	
4.	Pictures and Videos	The use of images that support learning materials	9	2
		The use of videos that support understanding	10	
		Total		**10**

Table 4. Individual and small group test instrument grids

No	Aspect	Indicator	Item Number	Total Item
1.	Display Design	The attractiveness of the appearance of the E-Book	1	4
		Text readability	2	
		Image clarity	3	
		Clarity of instructions for using links (Google form & Youtube)	4	
2.	Material	The material is easy to understand	5	3
		Clarity of material description	6	
		Media gives enthusiasm to students in learning	7	
3.	Evaluation	Explanation of work instructions	8	3
		Questions according to the material	9	
		Easy-to-understand language	10	
		Total		**10**

Assessment of the quality of instruments (measuring instruments), such as tests and questionnaires, is carried out to obtain instruments or measure instruments that meet the eligibility requirements. The feasibility of an instrument as a measuring tool should meet at least five requirements, namely: the validity of the test instrument, the reliability of the test device, the difficulty level of the test, and the differentiability of the test. This development research used two data analysis techniques: quantitative descriptive and inferential statistical analysis. The quantitative descriptive analysis technique systematically processes data carried out in numbers or percentages regarding the object under study to obtain general conclusions. This analysis technique is used to process the data obtained through a questionnaire as a score using a Likert Scale with an even number of choice categories.

Inferential statistical analysis techniques are used to determine the effectiveness of products developed by analyzing the results of measuring test instruments before and after using E-Book learning media. Data were collected by giving pre-test and post-test to the fifth-grade elementary school students, then analyzed using a correlated t-test to find the difference between the pre-test and post-test results. Before testing the hypothesis using the t-test, it is necessary to carry out prerequisite tests, namely the normality and homogeneity tests. The normality test was carried out to know the distribution of data in the study. Decent data is normally distributed data. The normality of the data is determined using the Shapiro-Wilk formula for a sample of less than 30. The significance of the value test is compared with the value of the Shapiro-Wilk table to see its probability. Suppose the p value > 5%. Then the data is normally distributed. Meanwhile, if the p value ≤ 5%, then the data is not normally distributed. Then a homogeneity

test was carried out to determine whether the variance within the group was homogeneous or not significantly different.

The homogeneity of variance was tested on the two score distributions obtained from the pre-test and post-test. The homogeneity test used in this study is Fisher's Test (F-Test). Test criteria if Fcount <Ftable, which means the sample is homogeneous. The F-test was carried out at a significance level of 5% with df1 = k – 1 and df2 = n – k. The analysis technique for testing the hypothesis is a correlated t-test analysis technique using two different treatments for one sample, namely testing differences in learning outcomes before and after using E-Book learning media. The trial results were compared to tables with a significant level of 0.05 (5%) to determine the effectiveness of using Problem-Based Learning-based E-Book learning media. Research hypothesis: H_0: There is no significant difference (5%) before and after using the media. H_1: There is a significant difference (5%) before and after using the media. If tcount > ttable, then H0 is rejected, and H1 is accepted. If tcount ≤ ttable, then H0 is accepted, and H1 is rejected.

3. RESULTS AND DISCUSSION

Results

This research was conducted in the fifth grade of the first semester at SD No. 1 Mengwi, Badung, Bali. The subjects in this study were all 28 fifth-grade students. The design and development of Problem-Based Learning-based E-Book learning media in social science lesson content uses the ADDIE development model, which consists of 5 stages in its implementation. The first stage is the stage of analysis needs, analysis of learning facilities, and material analysis. At this stage, a questionnaire of student needs is given to analyze the needs of students. Student responses show that students get bored easily in learning if they only use printed books obtained from schools. Then developed an E-Book based on Problem-Based Learning. The facilities owned by the school, such as LCD/projector and speakers, and one laptop for every fifth grader to operate the E-Book media. Based on the needs analysis, the Indicators and Basic Competencies used are Natural and Artificial Appearance materials in Indonesia.

The second stage is the design stage (design). This stage is carried out to design ideas and concepts from the results at the analysis stage. The design process is needed to make it easier for researchers when designing E-Book media. This design stage includes steps to determine hardware and software, design the E-Book media (storyboards and flowcharts), design E-Book components using Microsoft Office PowerPoint 2019 software and the Flip PDF Corporate application, compile material on the E-Book, prepare lesson plan and design validity test which obtained a percentage of 90% with very good qualifications. The third stage is development (development). The development stage is the step to carry out the design to produce a real product that is valid and effective for use. This stage includes E-Book production activities, making product validity questionnaires, and conducting product validity/feasibility tests. At the development stage, it is adjusted to the flowchart and storyboard that has been designed. E-Book development includes covers, pages for Problem-Based Learning learning models, material pages, YouTube-integrated learning video pages, and evaluation question pages containing Google Form links. The process of making E-Book learning media uses the PowerPoint 2019 application and then converting it into a pdf file and converting it in Flip PDF Corporate. Then it is hosted on the infinity free application so that the final product is in the form of a link that can be accessed via a browser using a SmartPhone/laptop. The final results of the E-Book learning media can be seen in Figure 1.

The media that has been developed is then tested for validity/feasibility, which content/subject matter experts assess, instructional design experts, learning media experts, individual trials, and small group trials. The instrument used at the product validity testing stage is a questionnaire that aims to determine the product's validity and comments/suggestions from the validator used as a guide in media improvement. The results of the expert tests and trials on students can be seen in Table 5. The media that had been developed were then tested for validity/feasibility, which content/subject matter experts assessed, instructional design experts, instructional media experts, individual trials, and small group trials. The instrument used at the product validity testing stage is a questionnaire that aims to determine the product's validity and comments/suggestions from the validator used as a guide in media improvement. The results of expert tests and trials on students can be seen in Table 5.

Based on the review results from content/subject matter experts, they obtained a percentage of 91.67% with very good qualifications, instructional design experts obtained a percentage of 88.6% with good qualifications, instructional media experts obtained a percentage of 90% with very good qualifications, trials individuals get a percentage of 97.5% with very good qualifications. and small group trials obtained a percentage of 92.2% with very good qualifications. At the product validity testing stage, a questionnaire was used to determine product validity, and comments/suggestions from validators were used as guidelines for product revision. The next stage is the preparation of pre-test and post-test

questions and then tested first to determine the test's validity, reliability, difficulty level, and differential power.

Table 5. Percentage of E-Book Learning Media Trial Results

No	Trial Subjects	Result	Qualification	Description
1.	Content/Study Material Expert	91.67%	Very good	No need to revise
2.	Instructional Design Expert	88.60%	Good	Revised as necessary
3.	Learning Media Expert	90.00%	Very good	No need to revise
4.	Individual Trial	97.50%	Very good	No need to revise
5.	Small Group Trial	92.20%	Very good	No need to revise

The fourth stage is implementation. Implementation is the application of product development produced and declared valid to be used as a broad learning media in the learning process. In addition, an effectiveness test was carried out by giving pre-test and post-test questions to determine the product's effectiveness. Before implementing the valid E-Book media used widely in the learning process, the 28 fifth-grade elementary school students were given a pre-test to determine social science knowledge competence before using the E-Book and followed by providing treatment/implementation, namely using E-Book learning media in the learning process which was carried out for two meetings. Each meeting has a time allocation of 2 × 35 minutes (2 hours of lessons), and the learning syntax is adjusted to the lesson plan. After applying the E-Book media to the learning process, it continued by giving a post-test to determine the competency of social science knowledge after using the E-Book learning media.

Figure 1. Final Results of E-Book Learning Media

The fifth stage is the evaluation stage. Evaluation is carried out after the data from the pre-test, and post-test results are collected, then whether there is an improvement is analyzed. If there is no further improvement, then the E-Book is valid/appropriate for learning. This evaluation stage is divided into two; the formative evaluation stage is carried out by assessing the product based on experts' assessment results and student responses to the product being developed. Then the summative evaluation stage is carried out to determine the effectiveness of the product being developed. The results of the pre-test and post-test scores were analyzed using a correlated t-test to determine the effectiveness of learning using E-Book learning media. The effectiveness of the development of Problem-Based Learning-based E-Book learning media is carried out using the test method and analyzed using the prerequisite test to find normality and homogeneity and a correlated t-test. Based on the normality test results, Shapiro Wilk obtained 0.938 for n = 28 at p = 0.1 and p = 0.5. Then p (0.938) > 0.05 (0.924) so that the data from the pre-test results are normally distributed. Based on the normality test results, Shapiro Wilk obtained 0.933 for n = 28 at p = 0.05 and p = 0.1. Then p (0.933) > 0.05 (0.924) so that the post-test results are normally distributed.

Based on the homogeneity test results obtained, Fcount < Ftable (k – 1, n – k), that is, Fcount (2.393) < Ftable (4.020), so that H0 is accepted, which means the sample is homogeneous. Based on the results of the t-test, tcount = 8.910 for db = 54 and a significant level of 5% = 2.005. It means tcount > ttable, so H0 is rejected, and H1 is accepted. Then product revisions were carried out based on the results of product validity tests from experts and students for comments/suggestions relating to improving or

perfecting the E-Book being developed. According to content/subject matter experts, that is changing the evaluation questions available in the E-Book to become more HOTS questions. According to learning media experts, that is adding instructions for using the E-Book for using Smartphones/Laptops. Meanwhile, according to instructional design experts, individual trials, and small group trials, there are no comments/notes that are revising in nature, so nothing needs to be revised.

Discussion

This development research produced a product in the form of a Problem-Based Learning E-Book for fifth-grade students. The media was developed using the ADDIE development model (Analyze, Design, Development, Implementation, and Evaluation). The purpose of developing Problem Based Learning-based E-Book learning media is so that students can hone their critical thinking skills so that they are in line with the development of 21st-century learning. The effectiveness of the E-Book on social science lesson content for fifth-grade elementary school. Several factors, including the first, influence the success of developing Problem Based Learning-based E-Book media products. The suitability between media content and curriculum, materials, and learning objectives is one of the factors supporting the success of developing a media. Learning media can facilitate the learning process and help teachers achieve learning goals (Aftiani et al., 2021; Liana et al., 2021; Rahayu & Wahyuni, 2021). Learning objectives are reflected in learning that can acquire knowledge, attitudes, and skills after a learning process, so the material in learning media must follow predetermined learning objectives (Andaresta & Rachmadiarti, 2021; Susilawati & Rusdinal, 2022).

The second supporting factor for success is that the developed media has an attractive appearance and design. Design, in this case, relates to the images, colors, and fonts used (Aisyah & Sucahyo, 2022; Handayati, 2020). In the media, images have a role in helping students understand abstract messages to become concrete, motivating students, and directing students' attention (Sanuaka et al., 2017; Silva et al., 2019). In addition, using appropriate colors will also increase comfort when students read and study the media (Andini & Qomariyah, 2022; Yanti & Ampera, 2021). The third factor is that the developed media can increase students' enthusiasm for learning. It is because the use of learning media in the teaching and learning process can generate new desires and interests, encourage motivation and stimulation, and learning activities even carry a psychological influence on students. Thus students are expected to be able to receive and absorb easily and well the messages in the material presented (Bayani, 2019; Puspaningrum et al., 2021; Suprapto et al., 2019). Learning by using the media will liven up the learning atmosphere so that a good relationship will be established between the teacher and students (Agatha & Dewi, 2020; Yusup et al., 2018).

The fourth factor, the developed e-book media, can improve student learning outcomes. It is because the E-Book media can help students understand the material, improve students' critical thinking skills in solving problems and improve student learning outcomes (Novitasari et al., 2019; Wilyanti et al.. In addition, e-book media can function as an alternative media source of digital information which includes materials, methods, and quizzes/tests that display pictures, videos, and animations so that students can understand the material clearly (Azmanita & Festiyed, 2019; Khoirunnisa et al., 2020; Simamora et al., 2022). The results obtained in this study are in line with the results of previous research, which also revealed that E-Book learning media has a high feasibility level, so it is suitable for use in social science lesson content (Puspita et al., 2021). The results of other studies revealed that the product of E-book-Based Teaching Materials is feasible to be used in social science learning in the fourth grade of elementary school (Nurjamilah, 2022). The results of subsequent research also revealed that e-book learning media is not only suitable for use by elementary school students and teaching students because it has a practical design and is easy to use (Nasution et al., 2021). Based on the results of the research analysis supported by previous research, e-book media is suitable for learning.

4. CONCLUSION

Based on the results of data analysis and discussion, it can be concluded that learning media in the form of E-Books based on Problem-Based Learning in social science lesson content for fifth-grade elementary school students is feasible to develop and teach because it can improve social science learning outcomes for fifth-grade elementary school students.

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