Digitalizing Culture in Education: A Local Wisdom-Based E-Book on Balinese Songs for Fourth Graders

Ni Kadek Sindy Dwi Kristina[1*], I Wayan Sujana[2], Ni Wayan Suniasih[3]

[1,2,3] Pendidikan Guru Sekolah Dasar, Universitas Pendidikan Ganesha, Singaraja, Indonesia

ABSTRAK

Penelitian ini didasarkan pada ketidakmampuan pendidik atau guru dalam menyediakan media pembelajaran yang menarik dan inovatif. Hal tersebut berdampak signifikan terhadap hasil belajar siswa yang masih rendah atau berada di bawah Kriteria Ketuntasan Minimal (KKM). Oleh karena itu, diperlukan sebuah media yang dapat menangani permasalahan belajar siswa. Penelitian ini bertujuan untuk mengembangkan buku elektronik berbasis kearifan lokal yang berfokus pada lagu-lagu Bali dengan tema "Daerahku dan Kekayaan Alamnya" dalam pembelajaran Ilmu Pengetahuan Alam dan Sosial (IPAS) untuk siswa kelas IV Sekolah Dasar. Penelitian ini menggunakan model pengembangan ADDIE dengan subjek penelitian sebanyak 16 siswa kelas IV Sekolah Dasar. Hasil penelitian menunjukkan bahwa pada penilaian rancang bangun, E-Book *memperoleh skor sebesar 90,91%, yang dikategorikan sangat baik. Penilaian kelayakan* E-Book *berdasarkan uji ahli isi pembelajaran mencapai 90,63%, uji ahli desain pembelajaran sebesar 91,25%, dan uji ahli media pembelajaran sebesar 90,91%, yang seluruhnya termasuk dalam kategori sangat baik. Pada uji coba perorangan,* E-Book *mendapatkan skor 94,64%, dan pada uji coba kelompok kecil memperoleh skor 93,25%, yang keduanya dikategorikan sangat baik. Selanjutnya, uji efektivitas menunjukkan nilai t_{hitung}=7,097. Berdasarkan hasil tersebut, dapat disimpulkan bahwa buku elektronik berbasis kearifan lokal tentang lagu-lagu Bali dengan tema "Daerahku dan Kekayaan Alamnya" dalam pembelajaran IPAS kelas IV Sekolah Dasar efektif untuk diterapkan dalam proses pembelajaran.*

ABSTRACT

This study was motivated by the inability of educators or teachers to provide engaging and innovative learning media. This issue significantly impacts students' learning outcomes, which remain low or below the Minimum Competency Criteria (KKM). Therefore, it is essential to develop a learning medium that addresses students' learning challenges. The aim of this research is to develop a local wisdom-based electronic book (E-Book) focusing on Balinese songs with the theme "My Region and Its Natural Resources" in the teaching of Natural and Social Sciences (IPAS) for fourth-grade elementary school students. This study employs the ADDIE development model with 16 fourth-grade elementary school students as research subjects. The findings indicate that the E-Book's design assessment achieved a score of 90.91%, categorized as excellent. The E-Book's feasibility was confirmed through expert evaluations, with a learning content expert scoring 90.63%, an instructional design expert scoring 91.25%, and a media expert scoring 90.91%, all categorized as excellent. In individual trials, the E-Book scored 94.64%, and in small group trials, it scored 93.25%, both of which are categorized as excellent. Furthermore, the effectiveness test yielded a calculated t_{value} of 7.097. Based on these results, it can be concluded that the local wisdom-based E-Book on Balinese songs with the theme "My Region and Its Natural Resources" is effective for use in the IPAS learning process for fourth-grade elementary school students.

1. INTRODUCTION

Education is one of the efforts that can be done by someone to improve the quality of themselves. The quality of human resources is determined by the level of education of a person, it is generally known that a lower level of education leads to a lower quality of human resources, while a higher level of education leads to a higher or better quality of human resources (Sutiono, 2021). With education a student will learn

Corresponding author
*E-mail addresses: kadeksindydwikristina@gmail.com (Ni Kadek Sindy Dwi Kristina)

well and students are ready to face challenges in the future. Many efforts and useful strategies are needed to improve student learning outcomes (Suyuti et al., 2023). In order to create quality human resources and have competitiveness, education needs to be optimized. Education will not be separated from learning activities. Teachers as educators need to create learning that can support smooth learning in the classroom. Assessment of learning outcomes is the process of giving values to student learning outcomes based on certain criteria, which shows that the object being assessed is student learning outcomes (Noor, 2020). Learning outcomes are the abilities acquired by students as a result of learning experiences, which include cognitive, affective, and psychomotor components (Bagja Sulfemi & Supriyadi, 2018). Less than optimal learning in class can affect the learning outcomes.

Along with the increasing use of technology and science, the development of technology today is increasingly advanced and very rapid. Now technology has entered many fields, including education. Everyone who works in education must be able to keep up with and follow technological developments. Educators must not only understand technology, but also be able to follow technological developments, in accordance with 21st century learning, one of which is related to its use (Khairini & Yogica, 2021; Wisada et al., 2019). 21st century learning requires the ability to learn and innovate, the ability to access information, the ability to use media and technology, and the ability to be digitally literate (Akib et al., 2020; Astuti, 2019; Kurniati et al., 2022; Norris et al., 2023). In the field of education in the 21st century, it has a significant impact. Where educators and students must be brave and ready to take new steps to face the industrial revolution 4.0 or 21st century learning that includes technology (Rifa Hanifa Mardhiyah et al., 2021). With the development of this technology, educators and students must use technology to improve the learning process. Learning media is one of the uses of technology in the field of education (Yuhana & Aminy, 2019;Linda Widyastuti et al., 2017). In general, technology in learning can help students learn better by providing access to more and varied learning resources, making learning more flexible, active, collaborative, and helping teachers organize and evaluate lessons better (Makabori & Tapi, 2019).

However, the limitations of the use of technology in learning are still a challenge for teachers. And a teacher thinks that making learning media is something that is difficult to make (Husnul Hotimah, 2022; Siregar & Partha, 2020). As a result, the learning process using digital media or technology is still less effective and optimal (Belva Saskia Permana et al., 2024). This is what causes a teacher to be reluctant to use learning media in classroom learning. However, it is not uncommon for classroom learning to be less than optimal and affect student learning outcomes. Based on the results of interviews with grade IV teachers at SD Negeri 1 Gadung Sari, the learning objectives about local material and natural resources have not been achieved in accordance with the Minimum Completion Criteria (KKM) that have been set at SD Negeri 1 Gadung Sari. In addition, there are several students who get a score of 50, far below the KKM set at 65. The lack of variation in the delivery of teaching materials in class causes some students' learning outcomes to be low. The cause of the low student learning outcomes is due to the material given by the teacher being less innovative and the lack of use of media in learning. In addition, the lack of use of media around students so that learning only focuses on the available learning books. It is undeniable that natural resources and regional materials are still abstract and grade IV students rarely know about them. Teachers are less innovative and interesting in explaining the material. So, it can be concluded that teachers are less creative and interesting in explaining the material.

The solution to overcome these problems by using the right media for learning in the 21st century is digital media. This digital media functions as an intermediary to deliver learning materials. In addition, the purpose of this digital media is to support one of the efforts to increase literacy, namely digital literacy; this is included in one of the six types of basic literacy. Digital books, also referred to as E-Books are digital publications that contain text, images, videos, and sound and can be read on computers or other electronic devices (Handoko et al., 2021; Wahyuni & Rahayu, 2021b). E-Books are also known as electronic books, they are books that can be opened   electronically using a computer (Agustian & Vlora, 2023; Vidergor & Ben-Amram, 2020). One type of media that can be used in learning is E-Book, where E-Book consists of text, images, or both, and can be read via computer or other electronic devices (Gabriel Matanari et al., 2022; Muslim et al., 2021; Vidergor & Ben-Amram, 2020). E-Book is a digital media that can be used in learning. E-Book has information such as text, images, audio, video, animation, narration, and music (Muwaffaqoh et al., 2021). By using E-Books, teachers can present lessons in a more varied way and easier for students to understand (Nahriyah & Rachmadiarti, 2023; Suryani & Khoiriyah, 2018). In the E-Book there are various features such as images, videos, and audio in the book to attract students' attention and improve their learning outcomes (Suryani & Khoiriyah, 2018). The E-Book media on the material of my region and its natural resources is oriented towards Balinese songs, especially children's songs. In this E-Book there are also several aspects. The first is faith, where students are asked to pray before doing the activities offered. The second is mutual cooperation, where students are asked to work together to maintain the natural

resources in their respective regions. The last is independence, students are asked to do assignments and complete assignments.

Previous findings show that this E-Book can improve students' abilities or student learning outcomes in science learning. Development of an E-Book based on a scientific approach to science learning on animal life cycle material for grade IV elementary school (Dwiputri et al., 2022). E-books using the QR Code-based Book Creator Application on teaching materials for Elementary School students are suitable for use (Madina & Zulherman, 2023; Retno Palupi et al., 2022). Utilization of E-books as a source of independent learning for students (Suryani & Khoiriyah, 2018). E-Book Based on Project Based Learning (PjBL) to train creative thinking skills (Wahyuni & Rahayu, 2021). However, until now there has been no development of Local Wisdom-Based E-Books of Balinese Songs, especially related to the material of my region and its natural resources. Therefore, this study was conducted to solve the problems faced by students. The purpose of this study is to develop local wisdom-based e-books that focus on Balinese songs with the theme "My Region and Its Natural Resources" in Natural and Social Sciences (IPAS) learning for grade IV Elementary School students.

2. METHOD

The research conducted is included in the category of development research. This development research aims to produce products in the form of E-Books, Learning Videos, and others. The development model used is the ADDIE model, in making E-Books that focus on the local wisdom of Balinese songs, my region material and its natural wealth in the science content for grade IV students. The selection of the ADDIE development model because it has systematic and practical development stages so that it can facilitate the development of products (Madina & Zulherman, 2023; Rachmadyanti & Gunansyah, 2020; Retno Palupi et al., 2022). The ADDIE development model has five stages of development, namely the analysis stage, design stage, development stage, implementation stage and evaluation stage. Visuals of the ADDIE development stages can be seen in Figure 1.
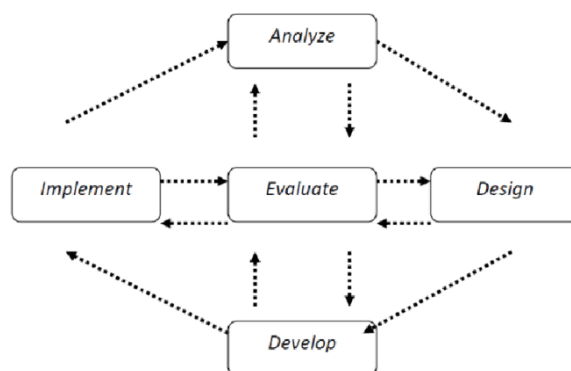

Figure 1. ADDIE Model Stages

This study was conducted by involving 16 fourth grade students of SD Negeri 1 Gadung Sari as research subjects. The development of this E-Book product uses the ADDIE development model which consists of five stages, namely analysis, design, development, implementation, and evaluation. The results of each stage of the ADDIE model development. The first stage, namely the analysis stage (analyze) is a stage to obtain initial information about the needs for making an E-Book. At this analysis stage, it is carried out through several stages. The first stage is needs analysis; the second stage is analysis of learning objectives and indicators of achievement; the third stage is analysis of student characteristics; and the fourth stage is material analysis. The second stage, the design stage, this stage begins after conducting an analysis and finding problems in elementary schools. After conducting an analysis to elementary schools, the research will create an E-Book and carry out several tasks, namely designing flowcharts, storyboards, and ADDIE model flow diagrams, carrying out design tests, determining the software used in developing the E-Book, collecting materials needed in developing the E-Book, compiling research instruments, compiling modules (Fahmeyzan et al., 2018; Nasar et al., 2024).

The third stage is the development stage, at this stage a product design that has previously been made and tested at the design stage, the next stage is realized into a real product and is ready to be tested. The fourth stage is the implementation stage of the E-Book product that has been made and tested by experts. And the last stage is the fifth stage, namely the evaluation stage which is carried out to determine the success of the E-Book product development. In this study, there were several subjects involved, namely

design experts, learning content experts, design experts, media experts, and 16 grade IV Elementary School students. This study collected data through tests, questionnaires, and interviews. In addition, the instruments used for data collection were learning outcome tests and questionnaires. The questionnaire used in this study was used to collect review data from design experts, learning content experts, learning material experts, learning media experts, and students. This questionnaire is useful for collecting data about the products developed in this study. Individual trials and small group trials used multiple-choice test instruments.

This multiple-choice test is used to collect data on student learning outcomes and then use the learning media that has been created. Furthermore, the results of this development research will be analyzed through quantitative descriptive analysis, descriptive statistical analysis, and inferential statistical analysis (t-test) of dependent samples. Data analysis with inferential statistics consists of prerequisite tests and hypothesis tests. In this prerequisite test, there are two more stages, namely the first is the normality test on the pretest results and the second is the normality test on the posttest results. A very simple Normality Test is to create a frequency distribution graph of existing scores (Usmadi, 2020). Normality Test is a test conducted with the aim of assessing the distribution of data in a group of data or variables to find out whether the data distribution is normally distributed or not (Fahmeyzan et al., 2018). A hypothesis is a single tentative assumption used to construct a theory or experiment and tested (Yam & Taufik, 2021). A hypothesis is a statement that is still weak in terms of its truth, so it needs to be proven with a temporary assumption (Handayani & Hernando, 2022). There are several grids used to collect data for research on the development of E-Book learning media based on the local wisdom of Balinese songs, as seen in Table 1, Table 2, Table 3, Table 4, and Table 5.

Table 1. The Grid of Validation Instrument for Design Development

No.	Component		Indicator	Item	Many Grains
1.	Development Model used	a.	The suitability of the development model used with the characteristics of the product produced.	1	2
		b.	The accuracy of the reasons for selecting the development model	2	
2.	Stages of development	a.	The suitability of the development stages carried out with the development model used.	3	2
		b.	Accuracy of depiction of development stages	4	
3.	Clarity, practicality and coherence	a.	Clarity of development stages based on the development model used.	5	3
		b.	The level of practicality of the development process implemented	6	
		c.	Development steps sequence	7	
4.	Formative and summative evaluation	a.	The accuracy of the evaluation design according to the model used.	8	4
		b.	Clarity of the evaluation instruments developed.	9	
		c.	Validity and reliability of evaluation instruments	10	
		d.	The accuracy of the test subjects involved	11	
	Amount				**11**

(Tegeh et al., 2014)

Table 2. The Content Expert/Learning Material Instrument Grid

No.	Component		Indicator	Item	Many Grains
1.	Curriculum	a.	Compliance of material with KD	1	3
		b.	Compliance indicator with KD	2	
		c.	Suitability of materials to learning objectives	3	
2.	Material	a.	The truth of the material	4	9
		b.	Accuracy of material	5	
		c.	The importance of material	6	

No.	Component		Indicator	Item	Many Grains
		d.	Depth of material	7	
		e.	Interesting material	8	
		f.	Suitability of materials to student characteristics	9	
		g.	Easy to understand material	10	
		h.	The material presents real life	11	
		i.	The concept of matter can be logically explained	12	
3.	Grammar	a.	Proper use of language	13	2
		b.	The language used is in accordance with the characteristics	14	
4.	Formative	a.	Suitability of questions to learning objectives	15	2
		b.	Compliance of the material with	16	
			Amount		**16**

(Suartama, 2016)

Table 3. The Learning Design Expert Grid

No.	Aspect	Component		Indicator		Item	Many Grains
1.	Contents	a.	Curriculum	1)	CP Compliance	1	3
				2)	Compliance of indicators with CP	2	
				3)	Suitability of material with the scope of IPAS	3	
		b.	Users	1)	Suitability of media to student characteristics	4	5
				2)	Suitability of material delivery with student development	5	
				3)	Providing opportunities for self-study	6	
				4)	Demanding student activity	7	
				5)	Paying attention to individual differences	8	
2.	Learning	a.	Beginning	1)	The attractiveness of the title	9	2
				2)	Conformity to purpose and material	10	
		b.	Core	1)	Material breakdown	11	7
				2)	Truth of the material	12	
				3)	Clarity of material	13	
				4)	The attractiveness of the example presentation	14	
				5)	Suitability of example presentation	15	
				6)	Language conformity with EYD	16	
				7)	Suitability of language to target users	17	
				8)	Suitability of practice questions with indicators	18	
		c.	Closing	1)	Proportion of practice questions	19	3
				2)	Feedback quality	20	
				3)	Feedback quality	20	
					Amount		**20**

(Safitri, 2017)

Table 4. The Learning Media Experts

No.	Aspect	Component		Indicator		Item	Many Grains
1.	Appearance	a.	Layout design	1)	The accuracy of background selection with the material.	1	2
				2)	Accuracy of layout proportions	2	
		b.	Text/typography	1)	Accuracy of font selection for easy reading	3	3

No.	Aspect	Component	Indicator	Item	Many Grains
			2) Correct font size for easy reading	4	
			3) Text color accuracy for easy reading	5	
		c. Picture	1) Image composition	6	3
			2) Image size	7	
			3) Image display quality	8	
		d. Animation	1) Suitability of animation to material	9	2
			2) The appeal of animation	10	
		e. Audio	1) The accuracy of selecting back sound with the material	11	2
			2) Accuracy of sound effects with animation	12	
		f. Video	1) Accuracy of video selection with animation	13	2
.			2) Video Quality	14	
		g. Packaging	1) The attractiveness of the front cover	15	2
			2) Appearance matches content	16	
			3) User compatibility	17	
2.	Program	a. Use	1) Flexibility (can be used independently and under guidance)	18	4
			2) Complete instructions for use	19	
			3) Providing benchmarks for learning success	20	
			4) Accuracy of use of navigation buttons	21	
		b. Navigation and interactive links	1) Accuracy of interactive link performance	22	2
			2) Accuracy of interactive link performance	22	
Amount					**22**

(Safitri, 2017)

Table 5. The Individual Test and Small Group Test Instrument Grid

No.	Component	Indicator	Item	Many Grains
1.	Appearance	a. Appealing appearance	1	3
		b. Clarity of text	2	
		c. Clarity and suitability of images	3	
2.	Material	a. Presentation of material.	4	8
		b. Ease of understanding the material	5	
		c. Clarity of sentences.	6	
		d. Clarity on evaluation issues	7	
		e. Suitability of evaluation questions	8	
		f. Giving examples in evaluation questions	9	
		g. Clarity of symbols	10	
		h. Media interactivity	11	
3.	Benefit	a. Ease of learning	12	3
		b. Interest in using media	13	
		c. Increased learning motivation	14	
Amount				**14**

(Safitri, 2017)

3. RESULT AND DISCUSSION

Result

One of the results of this development research is an E-Book based on Local Wisdom of Balinese Songs, Material of My Region and Natural Resources in Science Learning for Grade IV at Elementary School 1 Gadung Sari. The purpose of developing this E-Book is to make learning more innovative and interesting so as to increase students' interest and attraction to learning, especially in grade IV. This E-Book was developed by containing images, videos and relevant materials and also based on student reference books, which are packaged in an attractive way so that students do not get bored learning in class. This is designed with the aim of providing facilities and variations in learning. Trials have been carried out to perfect the E-Book product based on Local Wisdom of Balinese Songs for grade IV students using their cellphones or laptops. The first stage is analysis, this analysis stage is divided into three, namely the first is needs analysis. Based on the results of interviews with Mrs. AA Putu Yuni Widiastuti, S.Pd., a grade IV teacher at Elementary School 1 Gadung Sari, it was found that the learning objectives regarding the material of my region and its natural resources had not been fully achieved. This is shown by several students who received a score of 50, far from the school's KKM of 65. In addition, it was found that teachers rarely use media as a learning aid in the classroom. Therefore, learning becomes monotonous and students do not understand the material. In the end, student learning outcomes are also low or below the school's KKM.

The second stage of analysis is the analysis of learning objectives and achievement indicators. To determine the competency, analysis is carried out first. Students in grade IV are evaluated on the competencies needed to achieve the goal, namely understanding the material on my region and its natural resources in science learning. Then, in the third stage, namely the stage of analyzing student characteristics. This process is carried out by interviewing the class IVt teacher, Mrs. AA. Putu Yuni Widiastuti, S.Pd. From the interview, it was found that students still have difficulty understanding the material, especially the material on my region and its natural resources. Where this cannot be denied because the material on my region and its natural resources is still very abstract. Therefore, students need media to concretize the material. This problem is compounded by conventional learning or relying on books, which will make students bored and tired in class. In addition to the lack of learning media, students also have different learning styles, so they need media that can meet their learning styles. All problems faced by students will lead to poor learning outcomes. Therefore, the results of the analysis are based on the characteristics of students that have been carried out. Furthermore, media that can be used in science learning is made with the hope of helping students solve problems. The media is in the form of an E-Book based on Local Wisdom of Balinese Songs with the Material My Region and Its Natural Resources which is developed for grade IV students of SD Negeri 1 Gadung Sari. The purpose of this analysis is to find out the material from the E-Book that was made, and it is hoped that the material meets the needs and knowledge of students and meets the student competency requirements. Based on the material analysis carried out by looking at the teacher's book and student book for grade IV Chapter V Stories About My Region Topic B My Region and Natural Resources. The material listed in the E-Book is the material My Region and Its Natural Resources in accordance with the problems of students at SD Negeri 1 Gadung Sari.

The second stage is the design stage. The first stage is designing a flowchart, storyboard, and ADDIE model flow diagram. The first design is Flowchart. The flowchart of this E-Book product is made with the aim of making it easier for a reader to understand the workflow of the E-Book product based on Local Wisdom of Balinese Songs with the material My Region and Its Natural Wealth. The second design is Storyboard or storyboard on the E-Book product. This Storyboard contains visual designs of the media and descriptions of the displays in the storyboard. The third design is Flowchart. Where the flowchart is a picture that shows the work steps in accordance with the ADDIE development model. This flowchart functions to clarify a development process on the E-Book product, so that it can make it easier for readers to understand the process or flow of E-Book development. The second design stage is to carry out a design test on lecturers at Ganesha University of Education. At this stage of the design expert test, the Flowchart, storyboard, and ADDIE model flowchart that have been prepared will then be tested by the design expert. Where this design test aims to determine the suitability or consistency of the E-Book with the development model that has been used in this development. The third stage in the design stage is the determination of the E-Book Development software. In developing this E-Book product, several software is used, such as Canva, Heyzine and Wordwall. In this Canva software, it is used to create icons, backgrounds, images and so on. Then the second software is Heyzine. Where Heyzine is used to edit E-Book products by filling in Videos, Backsound, Animations, icons and so on. Then publish the E-Book so that it can be accessed by students via the web or links that have been shared by the teacher. Then the software used is Wordwall, where this wordwall is used to provide questions or evaluations so that students are more interested in learning using E-Books.

The fourth stage in the design stage is the collection of E-Book Materials. In this E-Book material collection stage, there are several materials used such as materials, animations, icons, and so on. At this stage, the collection of images that support the development of an E-Book product is also carried out. And the materials that have been collected will then be inserted into the E-Book product. The fifth stage in the design stage is the preparation of the Research Instrument. At the stage of compiling the research instrument used to assess the E-Book product that has been developed. The research instruments are such as content/material expert tests, media expert tests, design expert tests, individual tests, small group tests, and effectiveness tests. This research instrument is designed with reference to the indicators of achievement of learning objectives that have been made and determined previously. The sixth stage in the design stage is the preparation of the Teaching Module. At the stage of compiling this teaching module, the steps in this Teaching Module are able to create well-structured learning. In compiling this Teaching Module, it is adjusted to the material of my region and its natural resources and also to the E-Book product. Then there is the design of the E-Book based on the local wisdom of Balinese songs which can be seen at Figure 2 and Figure 3.
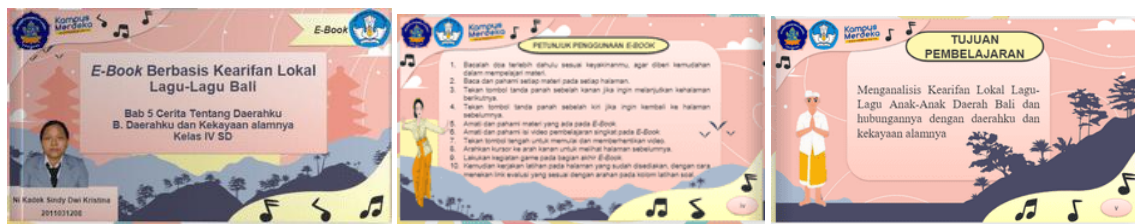

Figure 2. Cover Design, Instructions for Use and Learning Objectives of the E-Book

Figure 3. E-Book Material Display Design

The third stage is the development stage. In the activities that have been carried out at this stage, namely developing an E-Book product and validating the product by the validator. At this stage, the E-Book product that has been made resembles a book but in digital form, which contains materials that are discussed in the material of my region and its natural resources based on local wisdom of Balinese Songs, and in its delivery, images are also included related to the material of my region and its natural resources based on local wisdom of Balinese Songs. Where in this E-Book which discusses Balinese Songs, especially Balinese children's songs. Making this E-Book uses several applications including Canva, after finishing making the design on Canva the next step is to convert it to PDF. Then the PDF file will be converted in the Heyzine application. In this E-Book there is also a quiz that is made via the web wordwall which then gets a link to be included in the E-Book. So, the final result is a link that can be accessed by students via cellphones, Chrome books, laptops owned by students. Some parts of the E-Book can be seen in Figure 4.

Figure 4. Final Result of E-Book Product

This E-Book media is declared very feasible based on the results of the expert assessment of the learning content test of 90.63% which is qualified as very good, the expert test of learning design of 91.25% which is qualified as very good, the expert test of learning media of 90.91% which is qualified as very good, the individual trial of 94.64% which is qualified as very good and the small group trial of 93.25% which is qualified as very good, the overall percentage of the score is qualified as very good. (3) Based on the t-test,

the t$_{count}$ value is obtained = 7.097 while the t$_{table}$ value at a significance level of 5% and dk = n - 1 = (16 - 1 = 15) is obtained t$_{table}$ = 2.131. This shows that t$_{count}$ > t$_{table}$ so that H$_0$ is rejected and H$_1$ is accepted. So it can be concluded that there is a significant difference in learning outcomes between before and after using the E-Book. The fourth stage is the implementation stage, at this stage it is carried out before the E-Book is applied to students. This is done for product validation by experts, including design experts, learning content experts, design experts, and learning media experts. Product trials are also conducted, including individual and small group trials. Furthermore, it will be implemented in grade IV students. The fifth stage is evaluation, this stage is carried out in two stages, namely formative evaluation and summative evaluation. Formative evaluation involves assessing the E-Book product by experts and testing the product to students. While summative evaluation is carried out at the end of the activity by providing a pre-test and post-test. The purpose of summative evaluation is to measure how effective the product is on student learning outcomes. Therefore, the results of formative and summative evaluations are to find out if anything needs to be changed or improved. With this evaluation, researchers can easily find out whether the product being implemented is feasible, so that researchers can easily make product improvements.

To find out the effectiveness of the product E-Book Based on Local Wisdom of Balinese Songs The material of My Region and Its Natural Resources was tested on students using two tests, namely pretest and posttest. The results of the pretest and posttest were then processed with imperative statistics including prerequisite tests and hypothesis tests. The results of the pretest and posttest normality tests are as follows. The results of the pretest and posttest normality using the Shapiro Wilk formula. The first is the result of the pretest normality obtained a result of 0.926 for n = 16 which is between p = 0.1 and p = 0.5. This means that p> 0.05 so it can be concluded that this pretest data is normally distributed. And the results of the posttest normality are as follows 0.938 for n = 16, where the results of the posttest normality test are between p = 0.05 and p = 0.1. Where this means that p> 0.05 so it can be concluded that the posttest data is normally distributed. After getting the results of the normality test, the hypothesis test was carried out. The hypothesis in this study uses the t sample dependent formula. By using this formula, the results are obtained while at a significance level of 5% and dk = n -1 = (16 - 1 = 15) it is obtained. Where this shows that there is no significant difference in learning outcomes before and after using the E-Book product based on Local Wisdom of Balinese Songs, then it is rejected and which says there is a significant difference in learning outcomes between before and after using the E-Book product Based on Local Wisdom of Balinese Songs, then it is accepted. Based on this, it can be concluded that there is a significant difference in learning outcomes between before and after using the E-Book development product. This shows that the development of the E-Book based on Local Wisdom of Balinese Songs with the material of My Region and its natural wealth in science learning is effectively applied to grade IV students of SD Negeri 1 Gadung Sari.

Discussion

Based on the analysis that has been done, this study produced several findings, including the first finding showing that in the test of the content expert of the IPAS learning, it was found that the content of the E-Book Based on Local Wisdom of Balinese Songs had very good qualifications. This aspect of the content expert of learning meets various criteria, including content or material, grammar and curriculum. In Piaget's cognitive learning theory statement that students in grade four are at the concrete operational stage, where they can already do logical reasoning for things that are concrete but are not yet able to reason abstract concepts. Therefore, a bridge is needed to connect and simplify complex information to make it clearer (Suryani & Khoiriyah, 2018; Wardani et al., 2021). So, the right media to solve student problems is E-Book. E-Book is an innovative product of learning media that describes teaching materials with software and contains learning materials that are packaged as attractively as possible with various features such as text, video, images, audio, and graphics. E-Book also has the ability to build interaction between media and users (Putrislia & Airlanda, 2021; Syafani & Tressyalina, 2023).

The second finding is regarding the results of the evaluation of the learning design expert, this shows that the E-Book based on local wisdom of Balinese songs is in a very good qualification. This E-Book product has met the criteria of curriculum, objectives, visualization, and evaluation. One important part of compiling media is the learning design, which shows how the material to be discussed relates to the visualization and elements of the material presented in the E-Book. The comments from the learning design expert are of a revising nature, where this design will be changed to add good and correct learning objectives. Students will get the motivation to learn by using an attractive and appropriate E-Book design, especially if combined with good colors and images (Lieung et al., 2021; Wahyuni & Rahayu, 2021a). If the learning methods and media vary during the learning process, then the students' enthusiasm for learning will emerge and increase. This will make learning more conducive in the classroom later. The results of the review are also included in technical assessment criteria, appearance, text, images, and video. The appearance of the E-Book has a very important role in conveying learning messages through visual media

(Agustian & Vlora, 2023; Syafani & Tressyalina, 2023). Expert comments that are revised include changing the form of writing on the learning media to Times New Roman with font 14 with bright colors to attract more students' interest in learning. This E-Book is designed to help students use it independently, namely by working on questions that have been provided in the evaluation. In addition, the material is equipped with images about the Local Wisdom of Balinese Songs and contains links to videos that are relevant to the material being discussed. The results of the assessment by learning media experts show that the E-Book media was developed in a way that suits the needs of students. Thus, the E-Book media has a very good role and is worthy of being used in learning activities in the classroom, especially in class IV.

The fourth finding is by looking at the results of individual trials and small group trials. This fourth finding shows that the E-Book based on local wisdom of Balinese songs meets all the criteria. E-Book product trials that have been declared valid by experts to students. Product trials are carried out. This E-Book media is made so that students can learn effectively, as well as media that offers material that is in accordance with the material being discussed. Therefore, the researcher created an E-Book that helps students understand the material of my region and its natural resources in the subject of science. This E-Book is expected to be able to motivate students and attract them to learn. Furthermore, the results of the study showed that the E-Book teaching materials made met very good standards, so they were very feasible to be made and taught to students. In connection with the findings of the study, it can be concluded that the E-Book media is very feasible to be developed because it can overcome students' learning problems. In addition, there is a significant influence from the development of the E-Book Based on Local Wisdom of Balinese Songs, My Region and Its Natural Resources Material in Science Learning for Grade IV of SD Negeri 1 Gadung Sari. This finding is reinforced by the findings of previous research stating that the development of E-Books based on a scientific approach to science learning on animal life cycle material for grade IV elementary schools (Dwiputri et al., 2022). E-books using the QR Code-based BookCreator Application on teaching materials for Elementary School students are suitable for use (Madina & Zulherman, 2023; Retno Palupi et al., 2022). Utilization of E-books as a source of independent learning for students (Suryani & Khoiriyah, 2018). E-Book Based on Project Based Learning (PjBL) to train creative thinking skills (Wahyuni & Rahayu, 2021).

4. CONCLUSION

This E-Book is an electronic book media containing text, images, videos, or sound that can be accessed by computer, laptop, mobile phone or other electronic devices. Based on the results of the research that has been carried out, it can be concluded that the development of E-Book Based on Local Wisdom of Balinese Songs is valid and effective to be applied to the subject of Science on the material of my region and its natural resources for grade IV Elementary School students.

5. REFERENCES

Agustian, R., & Vlora, R. K. (2023). Perkembangan E-Book Dalam Penerbitan Buku Guna Memenuhi Kebutuhan Pengguna. *Central Publisher*, *1*(4), 354–361.
https://centralpublisher.co.id/jurnalcentralpublisher/index.php/Publish/article/view/95.

Akib, E., Imran, M. E., Mahtari, S., Mahmud, M. R., Prawiyogy, A. G., Supriatna, I., & Ikhsan, M. H. (2020). Study on Implementation of Integrated Curriculum in Indonesia. *IJORER : International Journal of Recent Educational Research*, *1*(1), 39–57. https://doi.org/10.46245/ijorer.v1i1.24.

Astuti, T. P. (2019). Model Problem Based Learning dengan Mind Mapping dalam Pembelajaran IPA Abad 21. *Proceeding of Biology Education*, *3*(1), 64–73. https://doi.org/10.21009/pbe.3-1.9.

Bagja Sulfemi, W., & Supriyadi, D. (2018). Pengaruh Kemampuan Pedagogik Guru Dengan Hasil Belajar IPS. *Jurnal Ilmiah Edutecno*, *18*(2), 1–19. https://osf.io/preprints/inarxiv/8wcb9/8wcb9_v1.

Belva Saskia Permana, Lutvia Ainun Hazizah, & Yusuf Tri Herlambang. (2024). Teknologi Pendidikan: Efektivitas Penggunaan Media Pembelajaran Berbasis Teknologi Di Era Digitalisasi. *Khatulistiwa: Jurnal Pendidikan Dan Sosial Humaniora*, *4*(1), 19–28.
https://doi.org/10.55606/khatulistiwa.v4i1.2702.

Dwiputri, S., Wahyudiana, E., & Hasanah, U. (2022). Pengembangan E-Book Berbasis Pendekatan Saintifik Pada Materi Siklus Hidup Hewan Kelas Iv Sekolah Dasar. *Efektor*, *9*(2), 220–229.
https://doi.org/10.29407/e.v9i2.17068.

Fahmeyzan, D., Soraya, S., & Etmy, D. (2018). Uji Normalitas Data Omzet Bulanan Pelaku Ekonomi Mikro Desa Senggigi dengan Menggunakan Skewness dan Kurtosi. *Jurnal VARIAN*, *2*(1), 31–36.
https://doi.org/10.30812/varian.v2i1.331.

Gabriel Matanari, O., Ardini, N. W., & Sudirana, I. W. (2022). Technology as a Digital Trace in the Sekar Rare-

Based Music Composition. *Journal of Aesthetics, Creativity and Art Management*, *1*(1), 37–41. https://doi.org/10.59997/jacam.v1i1.1595.

Handayani, V. A., & Hernando, L. (2022). Penerapan Aplikasi Uji Hipotesis (One-Tail Dan Two-Tail) pada Data Simulasi. *Jurnal CoSciTech (Computer Science and Information Technology)*, *3*(2), 168–174. https://doi.org/10.37859/coscitech.v3i2.3869.

Handoko, N. M. L., Rahmadianto, S. A., & Sukmaraga, A. A. (2021). Perancangan Buku Cerita Digital Legenda Batu Menangis dan Game Interaktif Berbasis Android Untuk Penanaman Nilai Moral Usia 4-6 Tahun. *Sainsbertek Jurnal Ilmiah Sains & Teknologi*, *2*(1), 176–192. https://doi.org/10.33479/sb.v2i1.141.

Husnul Hotimah, D. (2022). Teks Laporan Hasil Observasi & Teks Eksposisi. *Guepedia*, *1*, 7. https://doi.org/10.30872/ilmubudaya.v1i4.769.

Khairini, R., & Yogica, R. (2021). Pengembangan Media Pembelajaran Interaktif Berbentuk Android Packaging Kit (APK) pada Materi Virus. *Jurnal Penelitian Dan Pengembangan Pendidikan*, *5*(3), 406. https://doi.org/10.23887/jppp.v5i3.38502.

Kurniati, P., Kelmaskouw, A. L., Deing, A., Bonin, B., & Haryanto, B. A. (2022). Model Proses Inovasi Kurikulum Merdeka Implikasinya Bagi Siswa Dan Guru Abad 21. *Jurnal Citizenship Virtues*, *2*(2), 408–423. https://doi.org/10.37640/jcv.v2i2.1516.

Lieung, K. W., Rahayu, D. P., & Yampap, U. (2021). Development of an Interactive E-book to Improve Student's Problem Solving. *Jurnal Ilmiah Sekolah Dasar*, *5*(1), 8–15. https://doi.org/10.23887/jisd.v5i1.29814.

Linda Widyastuti, PranaDwijaIswara, & Isrok'atun. (2017). Penerapan Metode Pantau, Pangkas, Padukan, Panggil (4P) Untuk Meningkatkan Keterampilan Menulis Siswa Dalam Meringkas Cerita. *Jurnal Pena Ilmiah*, *2*(1), 91–100. https://doi.org/10.23819/jpi.v2i1.9530.

Madina, N. P., & Zulherman, Z. (2023). Pengembangan E-Book Berbantuan Book Creator Pada Materi Sistem Peredaran Darah Manusia Untuk Meningkatkan Hasil Belajar Siswa Kelas V SD. *Research and Development Journal of Education*, *9*(2), 779. https://doi.org/10.30998/rdje.v9i2.19012.

Makabori, Y. Y., & Tapi, T. (2019). Analisa minat membaca antara e-book dengan buku cetak mengunakan metode observasi pada Politeknik Tri Mitra Karya Mandiri. *IKRA-ITH Ekonomika*, *4*(2), 158–163.

Muslim, F., Refnida, R., Chen, D., & Wirayuda, R. P. (2021). Macroeconomic Digital Book Development: How are the Feasibility of Experts and Student Responses? *Journal of Education Technology*, *5*(3), 501–510. https://doi.org/10.23887/jet.v5i3.38280.

Muwaffaqoh, D., Kirana, T., & Rachmadiarti, F. (2021). The development of e-book based on project based learning on the plant anatomy structure material. *IJORER: International Journal of Recent Educational Research*, *3*(4), 416–431. https://doi.org/10.46245/ijorer.v2i4.127.

Nahriyah, A. S., & Rachmadiarti, F. (2023). Pengembangan E-Book Berbasis Problem Based Learning pada Materi Perubahan Lingkungan untuk Melatihkan Kemampuan Berpikir Kritis Siswa Kelas SMA. *BioEdu: Berkala Ilmiah Pendidikan Biologi*, *12*(2), 321–342. https://doi.org/10.26740/bioedu.v12n2.p321-342.

Nasar, A., Saputra, D. H., Arkaan, M. R., Ferlyando, M. B., Andriansyah, M. T., & Pangestu, P. D. (2024). Uji Prasyarat Analisis. *JEBI: Jurnal Ekonomi Dan Bisnis*, *2*(6), 786–799.

Noor, S. (2020). Penggunaan Quizizz dalam penilaian pembelajaran pada materi ruang lingkup Biologi untuk meningkatkan hasil belajar siswa kelas X.6 SMA 7 Banjarmasin. *Jurnal Pendidikan Hayati*, *6*(1), 1–7. https://doi.org/10.33654/jph.v1i1.927.

Norris, C. M., Taylor, T. A., & Lummis, G. W. (2023). Fostering collaboration and creative thinking through extra-curricular challenges with primary and secondary students. *Thinking Skills and Creativity*, *48*, 101296. https://doi.org/10.1016/j.tsc.2023.101296.

Putrislia, N. A., & Airlanda, G. S. (2021). Pengembangan E-Book Cerita Bergambar Proses Terjadinya Hujan untuk Meningkatkan Minat Membaca Siswa di Sekolah Dasar. *Jurnal Basicedu*, *5*(4), 2036–2044. https://doi.org/10.31004/basicedu.v5i4.1032.

Rachmadyanti, P., & Gunansyah, G. (2020). Pengembangan E-Book untuk Matakuliah Konsep Dasar IPS Lanjut Bagi Mahasiswa PGSD UNESA. *DWIJA CENDEKIA: Jurnal Riset Pedagogik*, *4*(1), 83. https://doi.org/10.20961/jdc.v4i1.39681.

Retno Palupi, D. A., Eka Putri, K., & Amirul Mukmin, B. (2022). Pengembangan E-book menggunakan Aplikasi BookCreator berbasis QR Code pada Materi Ajar Siswa Sekolah Dasar. *PTK: Jurnal Tindakan Kelas*, *3*(1), 78–90. https://doi.org/10.53624/ptk.v3i1.123.

Rifa Hanifa Mardhiyah, Sekar Nurul Fajriyah Aldriani, Febyana Chitta, & Muhamad Rizal Zulfikar. (2021). Pentingnya Keterampilan Belajar di Abad 21 sebagai Tuntutan dalam Pengembangan Sumber Daya Manusia. *Lectura : Jurnal Pendidikan*, *12*(1), 29–40. https://doi.org/10.31849/lectura.v12i1.5813.

Safitri, N. K. (2017). *Pengembangan Multimedia Interaktif Pembelajaran IPS Materi Proklamasi Kemerdekaan*

Indonesia Kelas V Sekolah Dasar. University of Muhammadiyah Malang.

Siregar, M. D., & Partha, I. D. P. (2020). Mengatasi Masalah Belajar Membaca Melalui Tutor di SD Negeri 2 Selong. *JKP (Jurnal Konseling Pendidikan)*, *4*(1), 20–26. https://doi.org/10.29408/jkp.v4i1.2598.

Suartama, I. K. (2016). *Evaluasi dan Kriteria Kualitas Multimedia Pembelajaran*. Universitas Pendidikan Ganesha.

Suryani, E., & Khoiriyah, I. S. A. (2018). Pemanfaatan E-book sebagai Sumber Belajar Mandiri bagi Siswa SMA/SMK/MA. *International Journal of Community Service Learning*, *2*(3), 177–184. https://doi.org/10.23887/ijcsl.v2i3.15422.

Sutiono, D. (2021). Profesionalisme Guru. *Tahdzib Al-Akhlaq: Jurnal Pendidikan Islam*, *4*(2), 16–25. https://doi.org/10.34005/tahdzib.v4i2.1569.

Suyuti, S., Ekasari Wahyuningrum, P. M., Jamil, M. A., Nawawi, M. L., Aditia, D., & Ayu Lia Rusmayani, N. G. (2023). Analisis Efektivitas Penggunaan Teknologi dalam Pendidikan Terhadap Peningkatan Hasil Belajar. *Journal on Education*, *6*(1), 1–11. https://doi.org/10.31004/joe.v6i1.2908.

Syafani, S. R., & Tressyalina. (2023). The Implementation of Interactive E-Books Based on Local Wisdom in Learning Biographical Texts. *Journal of Education and Humanities*, *1*(2), 16–22. https://doi.org/10.59687/educaniora.v1i2.27.

Tegeh, I. M., Jampel, I. N., & Pudjawan, K. (2014). *Model Penelitian Pengembangan*. Universitas Pendidikan Ganesha.

Usmadi, U. (2020). Pengujian Persyaratan Analisis (Uji Homogenitas Dan Uji Normalitas). *Inovasi Pendidikan*, *7*(1), 50–62. https://doi.org/10.31869/ip.v7i1.2281.

Vidergor, H. E., & Ben-Amram, P. (2020). Khan academy effectiveness: The case of math secondary students' perceptions. *Computers and Education*, *157*(July), 103985.1-12. https://doi.org/10.1016/j.compedu.2020.103985.

Wahyuni, L., & Rahayu, Y. S. (2021a). Pengembangan E-Book Berbasis Project Based Learning (PjBL) untuk Melatihkan Kemampuan Berpikir Kreatif pada Materi Pertumbuhan dan Perkembangan Tumbuhan Kelas XII SMA. *Berkala Ilmiah Pendidikan Biologi (BioEdu)*, *10*(2), 314–325. https://doi.org/10.26740/bioedu.v10n2.p314-325.

Wardani, M. A., Faiz, A., & Yuningsih, D. (2021). Pengembangan Media Interaktif Berbasis E-Book Melalui Pendekatan SAVI Pada Pembelajaran IPA Kelas IV Sekolah Dasar. *DWIJA CENDEKIA: Jurnal Riset Pedagogik*, *5*(2), 230. https://doi.org/10.20961/jdc.v5i2.53734.

Wisada, P. D. dan, Komang, S. I., & Yuda S, A. I. W. I. (2019). Pengembangan Media Video Pembelajaran Berorientasi Pendidikan Karakter. *Journal of Education Technology*, *3*(3), 140. https://doi.org/10.23887/jet.v3i3.21735.

Yam, J. H., & Taufik, R. (2021). Hipotesis Penelitian Kuantitatif. *Perspektif: Jurnal Ilmu Administrasi*, *3*(2), 96–102. https://doi.org/10.33592/perspektif.v3i2.1540.

Yuhana, A. N., & Aminy, F. A. (2019). Optimalisasi Peran Guru Pendidikan Agama Islam Sebagai Konselor dalam Mengatasi Masalah Belajar Siswa. *Jurnal Penelitian Pendidikan Islam*, *7*(1), 79. https://doi.org/10.36667/jppi.v7i1.357.