

## Development of Calistung E-Book with Flora and Fauna Character in Indonesian and Mathematics Learning Grade I Muhammadiyah Purworejo Elementary School

Feni Sariyati<sup>1</sup> Arum Ratnaningsih<sup>2</sup> Rintis Rizkia Pangestika<sup>3</sup>

Elementary School Teacher Education Study Program, Faculty of Teacher Training and Education, Muhammadiyah Purworejo University, Central Java Province, Indonesia<sup>1,2,3</sup>

Email: [fenisariyati10@gmail.com](mailto:fenisariyati10@gmail.com)<sup>1</sup>

### Abstract

This research is a research and development (Research and Development) using the ADDIE development model, which consists of five stages: Analysis, Design, Development, Implementation, and Evaluation. The subjects in this study were grade 1 students of SD Muhammadiyah Purworejo in the 2021/2022 academic year. Data collection techniques in this study were interviews, questionnaires, tests, and documentation. The instruments used are interview sheets, validation sheets, student response questionnaires. The results of the research carried out: (1) Produce the Calistung E-Book using the ADDIE model, (2) The feasibility of the product is obtained from the validity of getting a value of 3.44. Then the practicality of the student's response with a value of 3.75. (3) the effectiveness of the product is seen based on the results of the pre-test and post-test with an effectiveness percentage of 71.4%. Based on this study, it can be concluded that the E-Book Calistung with Flora and Fauna Characters developed in this study is categorized as very feasible and effective to be used as a learning medium in elementary schools.

**Keywords:** ADDIE, Calistung, E-book



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### INTRODUCTION

The development of science and technology is currently experiencing a significant increase, especially in the field of technology. The use of technology is not only used for adults, currently it is widely used by early childhood, especially elementary school age students. According to Tapscott (Wicaksono & Rachmadyanti, 2016:513) states that elementary school-age students who are in generation Z were born in 1998-2009 while generation A was born in 2009 and above, this generation is the generation that uses the internet more much. The characteristics in generations Z and A have something in common, namely being fluent in technology, able to interact through social media, and expressive.

This is a challenge for a teacher as an agent of change who has an important position in changing learning conditions. Therefore, teachers are able to guide their students to be able to make good use of social media in their use. Because in this era, many students are able to take advantage of technology for games, and browse useless sites. Technology can play a role in helping teachers in carrying out a learning process either at school or at home, especially in the current pandemic era, technology is used as the main source of learning.

Learning is the process of interaction that teachers have with students, and learning resources or learning media used in the student's learning environment both at school and at home. Learning at the elementary school level is the beginning of learning to instill basic concepts, so that the concepts that students receive as an opening for the power of the mind in facing the next level. In elementary school-age students, the learning model is still very fond of interesting things and needs the help of concrete objects to learn. Therefore, in delivering learning, learning media is needed that attracts students' attention and is in accordance with the character of students, namely by developing learning media.

One form of using technology as a learning medium is by utilizing digital books Ruddamayanti (2019:1194). A digital book or e-book is a learning medium in the form of an electronic book or e-book in which there is some material accompanied by images, writings, sounds, videos and sample questions to increase student insight and motivate student learning in PDF or other format. This e-book includes technology learning media whose use utilizes electronic devices such as cellphones and laptops. The purpose of making an e-book is to make it easier for students to learn independently, as well as to make students aware of the use of electronic devices.

In this study, the e-book developed has the character of flora and fauna. Literally the word character means the result of scratches, engravings, sculptures, in the form of images, signs, emblems on an object, perhaps it is a person, animal, plant, thing, state, event according to Mangunhardjana (2021:34). Characters can vary, not necessarily humans, can use animals, plants, or other objects that are likened according to Mabruri (2018:279). Then drawn from the notion of character itself can be drawn the conclusion, that the character of flora and fauna is a form or image that shows the characteristics of animals and plants, to be used as inspiration in making creative works. In addition, the character of flora and fauna can give its own uniqueness to the work displayed. The learning that must be mastered for elementary school students in the lower grades is Calistung. This learning is a combination of Indonesian and Mathematics subjects in grade 1 elementary school. The subject matter taken is the material of reading the beginning, writing the beginning, and counting.

According to Muyasaroh (2018:94) explained that early reading is an act or reading activity carried out by a child to recognize language symbols and sound symbols contained in texts or readings. Then Magdalene (2022:199) says that writing the beginning is actually synonymous with painting a picture. In this phase, the author does not express ideas but merely paints or copies the symbols of language sounds into the form of written symbols. Next Sriningsih (Mardika, 2019:30) reveals that counting activities for early childhood or elementary school students are also referred to as activities to name the sequence of numbers, or mention one by one to find out how many objects there are. In the initial reading activity using the syllaby method. This syllabic method is very suitable for students who are mostly unable to read well or are still at the initial reading stage, because this method teaches students how to read and students are easier to understand according to Hidayah (2021: 117).

Calistung learning is learning that directs students to be able to have skills to read, write, and count. These three points are the most important things for elementary school students to follow learning to the next level or can be said to be the initial concept to face further material. The delivery of Calistung material must be done by paying attention to the character of the students, so that students feel happy and not burdened in learning. In general, in the delivery of Calistung learning, teachers still use pictures and textbooks.

Based on the results of the analysis of Calistung learning activities at SD Muhammadiyah Purworejo, namely, that students have never used e-book media for Calistung learning. Students use only printed books and drawings. So the existence of varied learning media can create an interesting and not boring learning atmosphere. Therefore, researchers will develop e-book-based learning media on Calistung material in the form of a link with the title "Development of Calistung E-book with Flora and Fauna Character in Indonesian and Mathematics Learning Grade I SD Muhammadiyah Purworejo". This media is expected to be able to be a learning media that has a good impact on students' interest in learning and makes a positive contribution to the world of education.

## **RESEARCH METHOD**

The development of the Calistung e-book with flora and fauna characteristics uses research and development methods (Research and Development) using the ADDIE development model, which consists of five stages, namely: Analysis, Design, Development, Implementation, and Evaluation. The selection of the ADDIE model is because this model is commonly used for research on the development of learning media as well as the steps of the ADDIE model that are systematic and easy to learn. The product developed in this study is the Calistung e-book with flora and fauna characteristics in learning Indonesian and mathematics grade I SD Muhammadiyah Purworejo. The final result of this research and development is in the form of Calistung e-book learning media with flora and fauna characters in the form of links.

The subjects in this study were 20 grade I students of SD Muhammadiyah Purworejo for the 2021/2022 school year. The trial was carried out in two stages, namely an initial trial with 6 students and a field trial involving 14 students. Data collection techniques are the main stage in research that aims to obtain data according to Sugiyono (2017: 308). Data collection techniques and instruments in research are by using test and non-test techniques. The test is carried out by providing test questions, then for non-tests using interviews, questionnaires, and documentation. In giving tests, namely in the form of written tests and unwritten tests. Meanwhile, the data collection instruments in this study are in the form of interviews and evaluation questionnaires to test validity, practicality, and effectiveness.

The data measurement carried out is using a likert scale, meaning to provide an answer to each question by choosing one of the answers among 4 (four) choices according to Agrosamdhyo (2020: 28). Data analysis techniques are carried out to obtain Calistung e-book learning media that are suitable for use and quality by meeting the criteria of validity and practicality and effectiveness in the use of products. The type of data in this study is using qualitative data and quantitative data.

## **RESULTS OF RESEARCH AND DISCUSSION**

The results of the development of Calistung e-books with flora and fauna characteristics in learning Indonesian and mathematics grade I SD Muhammadiyah Purworejo include procedures for the development, feasibility, and effectiveness of Calistung e-books with flora and fauna characteristics. The following are the results of the development of the Calistung e-book with flora and fauna characteristics: The first stage of this study is analysis. At this stage what is done is to conduct a needs analysis. This needs analysis is based on interviews with grade I teachers at SD Muhammadiyah Purworejo. then Curriculum analysis, this curriculum analysis describes basic competencies (KD). Furthermore, the analysis of subjects, subjects used are Indonesian and mathematics with reading, writing, and calculating materials. The second stage is the design stage (Design). The design stage is the stage used to design the product based on the needs that have been set at the analysis stage. The process of creating this product design uses microsoft word 2010.

The third stage is the development stage (Development). At this stage of development, researchers can develop Calistung e-books according to the design that has been made. Development of this Calistung e-book media with the Flip PDF pro application. Calistung's e-book media development was created using microsoft word 2010 which was later converted to PDF. After becoming a PDF, it is edited using the Flip PDF pro application to insert audio, video, and create a Calistung e-book link. Calistung's e-book media development included flora and fauna characters as a background display of the e-book page and an overview of each material described. The final result of the Calistung E-book product with flora and fauna

characteristics is in the form of a link. Then at this stage of development is also carried out to get a Calistung e-book with a valid flora and fauna character. The validity of the Calistung e-book can be known through validation carried out by validators, namely media experts and material experts who are lecturers of Teacher Education at Muhammadiyah Purworejo Elementary School, practitioners who are grade 1 teachers of SD Muhammadiyah Purworejo. This validation assessment is performed using a 4-scale validation sheet. The validation results are carried out for product improvement, so that the product is valid and ready to be implemented. The following is data from the validity of media experts, material experts, and practitioners in the assessment of the Calistung e-book with flora and fauna characteristics that will be presented in table form.

**Table 1. Data on the Validity Results of the Calistung E-book with Flora and Fauna Characteristics by Media Experts**

Media Experts			
No.	Research Aspects	Indicator	Skor
1.	Graphics Feasibility	Size of e-boook	3
		E-book cover design (Cover)	4
		E-book content design	4
2.	Effectiveness of use	Use of language in materials	2
		Conformity of presentation of instructions for use of the e-book	3
		Ease of using buttons to switch pages	3
		Ease of access	3
		The ability of e-books to provide student feedback	2
3.	Presentation of Images of Flora and Fauna	Collapse of the presentation of images on the material	3
		Presentation of images of flora and fauna in the content of the book	3
4.	Audio	Audio clarity on narration	3
5.	Aspects of the Overarch View	Attractiveness of media appearance	3
		Regularity of media design	3
		Ease of use of media	3
		Merging of multiple media (images and audio)	2
Skor Total			44
Mean			2,93
Criteria			valid

**Table 2. Data on the Validity of Calistung E-book with Flora and Fauna Characteristics by Material Experts**

Experts			
No.	Research Aspects	Indicator	Skor
1.	Material Conformity	Suitability of the material to learning outcomes	4
		Accuracy of the material	4
		Material update	4
		Encourages curiosity	3
2.	Learning Aspects	Serving techniques	4
		Serving supporters	4
		Presentation of learning	4
3.	Language Feasibility Aspects	Coherence and collapse of the train of thought	4
		Businesslike	3
		Communicative	3
		Dialogue and interactive	4
		Compatibility with the development of learners	4
4.	Aspects of the Overarch View	Attractiveness of media appearance	4
		Regularity of media design	4
		Ease of use of media	3
Skor Total			56
Mean			3,73
Criteria			Very Valid

**Table 3. Data on the Validity Results of the Calistung E-book With Flora and Fauna By Practitioners**

Table 3: Data on the Validity Results of the Existing E-Book With Flora and Fauna By Practitioners			
No.	Research Aspects	Indicator	Skor
1.	Material Assessment	Suitability of the material to learning outcomes	4
		Accuracy of the material	4
		Material update	4
		Encourages curiosity	3
2.	Use of E-books	Use of language in materials	4
		Conformity of presentation of instructions for use of the e-book	3
4.	Attraction	Presentation of material on e-books	4
		Image rendering	4
5.	Benefit	Assist teachers in delivering material	4
		Help students understand the material	3
6.	Aspects of the Overarch View	Attractiveness of media appearance	4
		Regularity of media design	3
		Ease of use of media	3
		Merging of multiple media (image and sound)	4
Skor Total			55
Mean			3,67
Criteria			Very Valid

The fourth stage is the implementation stage. This stage is carried out with trials of the results of the development of Calistung e-books with flora and fauna characteristics that have been assessed by material expert validators, media experts, and practitioners. The trial process is carried out face-to-face with students in the computer lab room during learning hours. Calistung e-book trials were conducted by means of initial trials and field trials. The initial trial was a trial conducted using a small scale in the application of the Calistung e-book with flora and fauna characteristics. The initial trial was carried out involving 6 grade I students of SD Muhammadiyah Purworejo. The purpose of this initial trial was to identify the initial problems that occurred when the Calistung e-book was used using a student response sheet provided by the researcher after the learning process was completed using the Calistung e-book. Comments and suggestions from students were used to revise Calistung's e-book media before the field trial. In general, the results of student responses in the initial trial received a good response and there were no product revisions. The following are the results of students' responses to the Calistung e-book which are presented in the form of a table.

**Table 4. Results of Calculating Student Responses to 6 Students**

Aspects	Student Response					
	AM	AN	AU	LA	SA	SH
Flora and Fauna Character Display	Student Response					
2	4	4	4	4	3	4
Calistung E-book Display	Student Response					
1	4	4	4	4	4	3
3	4	4	4	4	4	3
4	4	4	4	4	4	3
9	4	4	4	4	4	3
10	4	4	4	4	4	4
Benefit Aspects	Student Response					
5	4	3	4	4	4	3
6	4	4	4	4	4	4
7	4	4	4	4	3	3
8	4	4	4	4	4	4
Average Number	4,0	3,5	4,0	4,0	3,4	3,4
<b>Mean</b>	<b>3,71</b>					
<b>Criteria</b>	<b>Very Practical</b>					

Field trials are the second stage in the application of Calistung e-bok with flora and fauna characteristics on a large scale. The field trial was carried out involving 14 grade I students of SD Muhammadiyah Purworejo. In this field trial, it was used to get even more convincing data from student responses through student questionnaires given after using the Calistung e-book. Comments and suggestions from students can be used to revise the learning media of the Calistung e-book. In general, the results of student responses in field trials received a good response and there were no product revisions. The following are the results of students' responses to the Calistung e-book which are presented in the form of a table.

Table 5. Results of Calculating Student Responses to 14 Students

Aspects	Student Response													
	AL	KE	AZ	CA	DI	GA	HA	IF	KA	BU	FA	SF	ST	AE
Flora and Fauna Character Display	Respon Siswa													
2	4	4	4	4	3	3	3	4	3	3	3	3	3	3
Calistung E-book Display	Student Response													
1	4	4	4	4	4	4	4	4	4	4	4	4	4	4
3	4	4	4	4	4	4	3	4	3	4	4	4	4	3
4	4	4	4	4	4	3	3	4	3	3	4	3	3	4
9	4	4	4	4	4	4	3	4	4	4	3	4	4	4
10	4	4	4	4	4	3	4	4	4	4	4	4	3	3
Benefit Aspects	Student Response													
5	4	4	4	4	4	3	4	4	4	4	3	4	4	3
6	4	4	4	4	3	4	4	4	4	4	4	3	3	4
7	4	4	4	4	4	3	3	4	4	3	4	4	4	3
8	4	4	4	4	3	4	3	4	3	4	4	3	3	4
Average Number	4,0	4,0	4,0	4,0	3,4	3,5	3,4	4,0	3,5	3,6	3,7	3,5	3,7	3,5
Mean	3,70													
Criteria	Very Practical													

The fifth stage is the evaluation stage. This evaluation stage is used to measure the achievement of student learning outcomes using pretest and post-test questions. This test can be done by comparing students' abilities before and after using Calistung e-book learning media with flora and fauna characteristics. The results of this evaluation are also used to determine the effectiveness of the Calistung e-book. The following is data on the results of pretest and post-test assessments in the initial trial.

Table 6. Preliminary Trial Pretest Results Data

No.	Student Name	Skor	Information
1.	AM	48	Incomplete
2.	AN	67	Incomplete
3.	AU	44	Incomplete
4.	LA	57	Incomplete
5.	SA	59	Incomplete
6.	SH	69	Incomplete
Mean		57	
Percentage		0%	



Table 7. Initial Trial Post-test Results Data

No.	Student Name	Skor	Information
1.	AM	82	Complete
2.	AN	79	Complete
3.	AU	79	Complete
4.	LA	71	Complete
5.	SA	73	Complete
6.	SH	92	Complete
Mean		79	
Percentage		100%	

The following is data on the results of pretest and post-test assessments in the initial trial in the form of tables and diagrams.

Table 8. Field Trial Pretest Results Data

No.	Student Name	Skor	Information
7.	AL	40	Incomplete
8.	AE	63	Incomplete
9.	KE	61	Incomplete
10.	AZ	65	Incomplete
11.	BU	53	Incomplete
12.	CA	65	Incomplete
13.	DI	53	Incomplete
14.	FA	73	Complete
15.	GA	79	Complete
16.	HA	53	Incomplete
17.	IF	53	Incomplete
18.	KA	73	Complete
18.	SF	57	Incomplete
20.	ST	73	Complete
Mean		62	
Percentage		28,6%	

Table 9. Field Trial Post-test Results Data

No.	Student Name	Skor	Information
7.	AL	73	Complete
8.	AE	88	Complete
9.	KE	79	Complete
10.	AZ	78	Complete
11.	BU	71	Complete
12.	CA	88	Complete
13.	DI	84	Complete
14.	FA	84	Complete
15.	GA	88	Complete
16.	HA	82	Complete
17.	IF	82	Complete
18.	KA	78	Complete
18.	SF	92	Complete
20.	ST	88	Complete
Mean		83	
Percentage		100%	

Based on the explanation from the table and diagram above, that the use of Calistung e-books with flora and fauna characteristics in the learning process shows better than without using Calistung e-books with flora and fauna characteristics, and proves that Calistung e-book media can be said to be effective for use with a percentage result of 71.4%.

**CONCLUSION**

Based on research on the development of Calistung e-book learning media with flora and fauna characteristics, it can be concluded that the development of this product uses R&D development with the ADDIE model which stands for the Analysis (analysis), Design (Design), Development (development), Implementation (Implementation), Evaluation (evaluation) stages. The final result of the research on the development of Calistung e-book learning media is in the form of a link. The feasibility of the Calistung e-book with the character of flora and fauna is obtained from the value of the validity and practicality of the product. The validity of Calistung e-book learning media with flora and fauna characteristics was obtained from the validation results by media experts with a value of 2.93 in the valid category, material experts with a value of 3.73 in the very valid category, practitioners with a value of 3.67 in the very valid category. So the overall result of the validity value is 3.44 with very valid criteria. Meanwhile, the practicality of Calistung e-book learning media with flora and fauna characteristics was obtained from student responses. Based on the responses of students in the initial trials and field trials getting an overall score of 3.75 is included in the very practical criteria. Furthermore, for the effectiveness of Calistung e-book learning media, it can be seen based on the results of pretest and post-test scores carried out in initial trials and field trials. The overall results in the trial were 71.4% complete. So it can be interpreted that Calistung e-book learning media is very effective to use.

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