The Development of Flipbook Based on the Addie Model in Science Learning for Elementary School Students

Yuliani Rahmawati¹, Komariah², Dede Trie Kurniawan³
Universitas Pendidikan Indonesia¹²³
Indonesia
yulianirahmawati@upi.edu

Abstract

This study is motivated by the lack of use of technology-based media in elementary schools. With the aim of knowing student learning outcomes after using the flipbook the characteristics of living things and user responses. The research was conducted to describe flipbook analysis, design, development, implementation, user response, student learning outcomes and evaluation of flipbook characteristics of living things. Flipbook is a form of presentation of book learning media in virtual form. The method used in this research is D&D (design and development) and used the ADDIE model (analyze, design, development, implementation, and evaluation)). The findings when research students have never learned to use design technology are made in Canva for development into an android application, tested for feasibility by media, language, material, learning experts with very decent category results with an average score of 82.6%. The implementation was carried out achieved a very good response from users with an average of 88.9% and the average student learning outcomes increased as seen from an average of 32.6 to 73.8. After the flipbook was tested, many evaluations had to be done, such as suggestions from students, namely the volume of the audio sound was still small and relatively inaudible when used if there were other students speaking so that their voices clashed. In general, this flipbook of the characteristics of living things is appropriate for third grade students in elementary school.

Keywords: Flipbook, Characteristics of Living Things, Elementary School

INTRODUCTION

Education is the basis for everyone to achieve a better life in the future. Thus, every era of education is always developing in various ways. Starting from the curriculum to the utilization of technology, in the world of education continues to grow. Thus, between the world of education and technology is inseparable, interconnected and need each other.

Technology in education is not something new anymore because at this time education is increasingly advanced and developing according to the demands of the era. Perhaps, if this education does not use technology, it will certainly be left behind in everything. The increasingly massive use of technology certainly makes us realize that we as someone who pursues the world of education must always continue to learn to use this increasingly sophisticated technology. There are so many
uses of technology in the world of education. One of them is the use of learning media in teaching and learning activities. So, this is the background of this there are several factors as we know that the spirit of learning students can depend on the teacher himself so that as a teacher must prepare learning that is not monotonous. The meaning of non-monotonous learning means that teachers must be more creative in developing learning. Thus, in this case the teacher provides monotonous learning without anything different in learning. besides that, in addition to monotonous learning, there are other factors that make students less focused on learning, namely teachers who are still lacking in the use of technology in learning. In this case, it may be that students play too much gadget rather than learning at home so that the focus is already on digital media. What makes students less interested in learning that is done as usual by teachers at school means that the school is not maximized in using technology for learning media. There are also other things that make learning less attractive to students so that it is quite monotonous because nowadays teachers are more required to complete something or be chased by targets such as in learning in elementary school which is already with theme learning which is required to complete several themes in one semester or even one year. This makes students too fixated on it so that they feel that there are no new things that can be done because teachers who have not been able to teach more creative learning to teach the theme. There are also things that some people may already know, after 30 minutes listening to learning, students' focus will decrease, this can mean that after 30 minutes of learning the focus of students is only to play with their friends so that this might go back to the teacher who has not been able to unite or combine play and learning which might reduce the enthusiasm of students when students want to play but at learning time.

Learning that is done will not be separated from the learning media used. Therefore, the media used should also attract students' attention in order to maintain student focus while learning, it can also increase student interest in learning activities carried out in class. So that students easily understand the learning material. Especially in this case, students sometimes find it difficult to distinguish weather from seasons. It is a challenge for teachers to explain to students so that there are no misconceptions. The issue becomes a background for making media for this weather topic. However, each student has individual characteristics that will affect their characteristics in learning and the possibility of this digital book media will facilitate all student characteristics in learning activities (auditory, visual and others). It is underlaid the teacher's awareness that the ability of students is different, of course this will also make it easier for the teacher for this problem because with this media students will find it easy to understand digital book media. Based on previous study about weather, season and climate topic, we conduct this study but the methods and media development used during the study are different.

METHOD

The study used the D&D (Design and Development) research method that carried out through the process of design, development and evaluation of results. This is equivalent to the meaning of D&D itself, namely the design of a systematic learning model consisting of design and development. In Hartanto (2016), according to Richey and Klein (2007) defined design and development research as, ...the systematic study of design, development, and evaluation processes with the aim of establishing an empirical basis for the creation of instructional and non-instructional products and tools and new or enhanced models that govern their development. We can interpret as follows, the systematic study of the design, development, and evaluation process with the aim of establishing an empirical basis for the creation of instructional and non-instructional products and tools and new or enhanced models that govern their development. Thus, from this opinion, it can be concluded that in this design and development research, it has been systematically started by making design, development, program evaluation which must meet the criteria of validity, practicality and effectiveness when digital books are used for teachers and students. The model used in this research is ADDIE, namely with the stages of analysis, design, development, implementation and evaluation.
RESULTS AND DISCUSSIONS

Results
Flipbook Development based on the ADDIE Model in science learning about the characteristics of living things in third grade elementary school is:

Analysis of the flipbook of the characteristics of living things

In this analysis stage, it began with an analysis of the problems of learning science at SDN Sukamulya precisely in third grade, namely students were still difficult to understand the characteristics of living things. Learning media refers to on KD 3.4 and 4.4 in learning 1 Sub Theme 1 Theme 1 Characteristics of Living Things. The material was chosen because it is in accordance with learning at school and the characteristics of living things are chosen based on the Basic Competencies of Indonesian Language for third grade elementary schools in the 2013 Curriculum with science content. The selected Basic Competencies are 3.4 and 4.4 regarding the Characteristics of Living Things. The material listed in the Basic Competencies was then analyzed to formulate indicators and learning objectives.

Flipbook design of the characteristics of living things

In making this flipbook, researchers need two applications so that finally the application can be used by users in the form of applications that can be downloaded by each research target, namely students, teachers, and parents. In addition, downloadable applications make it easier to validate to experts both media, material, and language experts. The application used to support the development of this media is www.canva.com which will be used to design products that will later be made into an application in the form of an android which will previously be downloaded in pdf form first. In addition to other media needs in the development there are also several things that must be made such as storyboards, GBPM, and lesson plans to carry out research in the classroom.

Development of flipbooks of the characteristics of living things

In designing this flipbook, researchers need two applications so that finally the application can be used by users in the form of applications that can be downloaded by each research target, namely students, teachers, and parents. In addition, applications that can be downloaded earlier facilitate validation to experts both media, material, and language experts. The application used to support the development of this media is www.canva.com which will be used to design products that will later be made into an application in the form of an android which will previously be downloaded in pdf form first.

Flipbook validation test of the characteristics of living things

The validation test was carried out by four experts, namely material, language, media, and learning experts with the following results:

1. Material expert validation
   The assessment score obtained from the material expert is 41 with an ideal score of 50. The score obtained is calculated according to the formula, namely the score obtained is divided by the ideal score and then multiplied by 100%, the result obtained is 82%. According to the criteria in the feasibility interpretation table, this flipbook of the Characteristics of Living Things is in the “Very Feasible” category. This means that from the results of material validation according to the material expert, flipbook is feasible for use in learning the characteristics of living things in third grade elementary school.

2. Language expert validation
   The assessment score obtained from the language expert is 40 with an ideal score of 45. The score obtained is calculated according to the formula, namely the score obtained is divided by the ideal score and then multiplied by 100%, the result obtained is 88.9%. According to the criteria in the feasibility interpretation table, this flipbook of the Characteristics of Living Things is in the “Very Feasible” category. This means that from the results of language validation according to the language expert, flipbook is feasible for use in learning the characteristics of living things in third grade elementary school.
3. Media expert validation
The assessment score obtained from the media expert is 41 with an ideal score of 50. The score obtained is calculated according to the formula, namely the score obtained is divided by the ideal score and then multiplied by 100%, the result obtained is 82%. According to the criteria in the feasibility interpretation table, this flipbook of the Characteristics of Living Things is in the "Very Feasible" category. This means that from the results of media validation according to the media expert, flipbook is feasible for use in learning the characteristics of living things in third grade elementary school.

4. Learning expert validation
The assessment score obtained from the learning expert is 31 with an ideal score of 40. The score obtained is calculated according to the formula, namely the score obtained is divided by the ideal score and then multiplied by 100%, the result obtained is 77.5%. According to the criteria in the feasibility interpretation table, the flipbook of the Characteristics of Living Things is in the "Feasible" category. This means that from the results of learning validation according to the learning expert, this flipbook is feasible for use in learning the characteristics of living things in third grade elementary school.

The percentage of assessment results from material experts is 82%, media experts are 82%, from language experts is 88.9%, and learning experts are 77.5. The resulting assessment results were added then divided by four and obtained an average of 82.6% and it can be concluded that the results of the assessment of material experts, media experts, linguists and learning experts on the media flipbook Characteristics of Living Things are in the "Very Feasible" category used in third grade elementary school for science learning.

Implementation of a flipbook of the characteristics of living things
Implementation was carried out at SDN Sukamulya, Mande sub-district, Cianjur district. Precisely in third grade with 34 students, teacher responses and also parent representatives who respond to the use of technology as many as 3 people. The trial was conducted on Wednesday, August 10, 2022 at 09.00 WIB until 12.00 WIB. Implementation can be done when the validation or feasibility test results from experts have been declared feasible, the implementation of this flipbook is also carried out when it has obtained judgment results from material experts, linguists, media experts, and learning experts. With the accumulated value or recapitulation of the validation test results getting the category "Very Feasible" although there are still many improvements that must be made. This media was tested on third grade elementary school students with students who initially never learned to use technology so that with this use it was able to attract students' attention, although students faced a little difficulty because they had never used flipbooks, especially those using laptops, those using cellphones tended to understand more easily.

Student learning outcomes
The study was conducted in third grade elementary school with 34 students who participated in the activity from beginning to end. The learning outcomes assessed using pre-test and post-test questions. The highest score during the pre-test was 80, the lowest score was 0 with an average pre-test score of 32.6. As for the post-test score, the highest score was 100 for the lowest score of 40 with an average of 73.8.

Table 1. Learning Outcomes using N-Gain

<table>
<thead>
<tr>
<th>Score</th>
<th>C1</th>
<th>C2</th>
<th>C3</th>
<th>C4</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lowest Score</td>
<td>0.3</td>
<td>-1</td>
<td>0</td>
<td>-1</td>
<td>Low</td>
</tr>
<tr>
<td>Highest Score</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>High</td>
</tr>
<tr>
<td>Average</td>
<td>0.7</td>
<td>0.4</td>
<td>0.7</td>
<td>0.5</td>
<td>Medium</td>
</tr>
</tbody>
</table>

From the table above, based on the results of the N-Gain score, the average results produced by students at each cognitive level are moderate so that this media is able to improve student learning outcomes with moderate categories or in other categories are feasible.
Response of students, teachers, and parents

Responses that have been carried out with 34 students get a response with an average percentage of 96.7 with the category "Very Feasible" from student responses with very positive student enthusiasm by using the application properly and correctly. In addition to the questionnaires filled out by students, researchers conducted open interviews by asking several questions to students in third grade at SDN Sukamulya that. First, students are very eager to participate in learning science with the topic of the characteristics of living things. As for if students are not eager to follow the science learning that is done because the learning is less interesting perhaps because students rarely use the media provided by the teacher. The teacher is also the same because of the limited technology in the environment, making the learning done may feel monotonous using only student books. The students conveyed that they were interested in learning using technology. Therefore, questionnaires and interviews achieved positive response from students.

The questionnaire was given to the teacher totaled 18 statement items with a maximum score of 90. The results obtained from the teacher are 83 divided by the maximum score of 90 then multiplied by 100%. Thus, 92.2% was obtained, from these results it can be categorized as "Very Feasible" from the teacher's response. In addition to the questionnaire, researchers also conducted interviews with teachers which included almost the same questions as students. Students are enthusiastic when learning is administered differently from the usual. Learning activities rarely use technology due to the limited availability of technology at school. even though it is true that the media is very supportive in learning activities in order to motivate students to enthusiastically learn. Thus, the teacher does not want to use technology for learning media but the lack of availability of media in the school. As well as the response of parents of students can be said to be in the "Very Feasible" category because the percentage is 81%.

Evaluation of the flipbook of the characteristics of living things

In the ADDIE model, evaluation is the last stage for developing a product. After the feasibility test was carried out by expert validation, namely from media experts, linguists, material experts and learning experts, this product was in the category of being very feasible for use. However, there are still many things that must be improved in order to be even better according to the suggestions and feedback from the experts. Such as from media experts to add how-to videos so that students or other users are easy to use this application. Evaluation from linguists must improve the logicality of the explanation. Material experts improve the breathing topic and learning objectives. Learning experts suggested to readjust the lesson plans made with the chosen model. In addition to evaluations from experts, there are evaluations from users, namely students because when in class the atmosphere is crowded so many voices are heard with the sound in the flipbook, the sound is quite small and can only be heard if it is quiet, therefore the evaluation of students, teachers, and parents is a voice that can be louder so that it can be heard in the dark. Because this is a media that can be used anytime and anywhere so that the elements must support all including the audio.

Discussion

Analysis of the flipbook of the characteristics of living things

This stage is the initial stage by analyzing the situation at school. Researchers have analyzed the school. Basically, in the school the teacher does not want to use the media but because of the limited technology available. Thus, the researcher found that at SDN Sukamulya need a media for learning activities in third grade elementary school, especially in learning the characteristics of living things because students like new things. It is no longer a new thing even though living in the countryside technology has begun to spread even though only one or two have technology such as cell phones but one another must often show it therefore when learning at school it is possible that students are less interested in learning because now it is the age of technology. It is in line with the opinion of Nurwardini Patrianti in Sevima (2022) that technology is able to overcome the challenges of the times as well as in elementary schools in learning activities must continue to develop. Therefore, the smallest thing is to make this flipbook in learning activities. After analyzing the follow-up needs of the school and in accordance with the times at this time that the development of
technology in learning and education should be considered because this is the demand of the times so that we are not left behind from others.

*Flipbook design of the characteristics of living things*

According to Arnita (2005), the explanation for this includes the ability to produce information and knowledge and conduct resource sharing that relies on information technology, which in turn will greatly benefit knowledge producers and society in general. From this opinion, we must understand that the sources of information and knowledge are broad, especially in technology, whatever we will look for we will find. Therefore, to follow up on the need for technology, researchers analyzed the material in terms of curriculum and student needs. Followed by making an outline of the media program by adjusting the learning objectives, storyboard and also designing the media to be made, namely flipbooks using the application at www.canva.com.

*Development of flipbooks of the characteristics of living things*

In accordance with the research method raised, namely design and development after doing the media design on the required application, the next step is to develop the media by designing interactive media. Because researchers do not analyze the characteristics of students in third grade at SDN Sukamulya, the media must include the characteristics of all students, namely audio, visual and audio visual. So that to add audio, video as well as interactive images must also be added to the corporate pdf flip application. In this application, we can add various types of elements such as audio, video that are offline or online. As students in learning activities still like to play too. Prepare quizzes that will be used for learning activities by using applications such as quizziz. Researchers use this quizziz application so that students are easy to work on even in groups. Because they will help each other find the answers because they are given a little time to answer.

*Flipbook validation test of the characteristics of living things*

Every media used based on the needs of students and must also comply with the existing eligibility criteria. Thus, what is made becomes a reference for learning to be even better. Therefore, the media developed before being tested in learning activities must first be validated by experts regarding the feasibility of the media that has been developed. Following up on what was said earlier, the flipbook of the characteristics of living things was validated to several experts, namely media experts, linguists, material experts and learning experts. which is done directly at the UPI Cibiru Campus. With the results of validation, namely media validation of 82%, material experts 82%, language experts 88.9% and validation results from learning experts are 77.5%. So that it can be averaged to 82.6% with the category "Very Feasible". This is in accordance with the opinion of Arikunto (in Ernawati and Sukardiyon, 2017) that the percentage results obtained will be integrated into qualitative data in the form of a description by referring to the score according to Arikunto, namely the 81-100% category is a very feasible category. So, if the number 82.6% is a category that is "Very Feasible" by making some improvements according to the examiner's suggestions. Some of the suggestions given by the validators are that linguists should pay attention to writing, the logicality of the storyline and also the use of effective sentences. Material experts should improve learning objectives, understanding of breathing and errors in writing. Media experts suggested making videos of media use, infographics, and learning activities documented with padlets. And the last is the suggestion from the learning expert to improve the learning steps that are adjusted to the model used and make learning objectives that are in accordance with the reference.

*Implementation of the flipbook of the characteristics of living things*

During the implementation, students were very enthusiastic about the learning activities carried out because they used media that they had never used before. Maybe this flipbook is a simple media that uses technology but because students have never learned to use technology students feel happy and excited. This is in accordance with the response of students who are very enthusiastic during learning activities using flipbooks.

*Student learning outcomes*

The learning outcomes obtained by students with an average increase after using technology characterizes that the application used can improve student learning outcomes on the material of the characteristics of living things. The acquisition of these learning outcomes is one of the objectives of using this flipbook technology for students because well-managed learning will produce interesting
Learning activities and atmosphere. It is in line with Corey's opinion in the education lecturer (2022), learning is a process in which a person's environment is deliberately managed to enable him to participate in a certain level of behavior under special conditions or produce responses to certain situations, learning is a special subset of education. From the learning outcomes obtained, it can also be seen from the original average of 32.6 to 73.8, which is a significant result even though it is not perfect so that based on this, the media is categorized as feasible for use because of the increased residual learning outcomes.

Response of students, teachers, and parents

The test was conducted directly at SDN Sukamulya with a response by one third grade teacher, 34 students and 3 parent representatives. The response of students and teachers as well as parents is very good when learning using this flipbook of the characteristics of living things. The media used previously has been improved in accordance with the suggestions of experts, namely linguists, media, material and learning experts, so that it can also be seen from the validation results of the feasibility test by experts in the "very feasible" category even though there must be some improvements. The response given by the teacher was very good, seen by the teacher filling out the questionnaire well, namely according to the teacher who saw the media included in the "Very Feasible" category because according to the teacher students get a new experience with learning using this flipbook. Learning is not monotonous, and students are able to know how to use technology wisely. In addition to students and teachers, researchers also conducted research on representatives of parents of students from third grade. It seems that although only three people represent but can represent all. According to parents, this learning is very helpful for their students in understanding the material on the characteristics of living things. Moreover, the use of gadgets become positive there are also new experiences and new knowledge gained from students for learning so that parents support the learning by using technology-based media such as the one studied, namely by using flipbooks.

Evaluation of flipbooks of the characteristics of living things

In the ADDIE model evaluation is the last stage for developing a product. After the feasibility test was carried out by expert validation, namely from media experts, linguists, material experts and learning experts, this product was in the category of being very feasible for use. However, there are still many things that must be improved in order to be even better according to the suggestions and feedback from the experts. Such as from media experts to add how-to videos so that students or other users are easy to use this application. Evaluation from linguists must improve the logicality of the explanation. Material experts improve the breathing section and learning objectives. and learning experts must readjust the lesson plans made with the chosen model. In addition to evaluations from experts, there are evaluations from students because when in class the atmosphere is crowded so many voices are heard with the sound in the flipbook, the sound is quite small and can only be heard if it is quiet. Therefore the suggestion from students, teachers, and parents is a voice that can be louder so that it can be heard. The media that can be used anytime and anywhere so that the elements must support all including the audio. A proper media is media that is easy to use and to understand by its users. It is in line with the opinion of Fakhtan (2022) that good media is media that looks attractive and also provides new experiences to students.

CONCLUSIONS AND SUGGESTIONS

Conclusions

Based on the results of the study that has been conducted by researchers related to the development of flipbook learning media on the topic of the characteristics of living things, it can be concluded that:

1. Based on the results of the analysis, learning media is needed in elementary schools where the study conducted. The media is appropriate to use there because learning in third grade elementary schools has never used technology-based media.

2. Flipbook design made with canva.com media is easy to make and various elements can be accessed in canva, and the images are attractive. So that it supports making flipbooks even more attractive when used for learning activities in third grade elementary schools.
3. The development of this flipbook was carried out using Flip PDF Corporate edition, in this application it is also easy to add all media such as audio, video, links as well as quizzes so that this media can be made properly. After being developed in the flipbook maker application, it is then made into an application that can be used on laptops and android using the website 2 apk builder application.

4. Based on the validation results from material experts, media experts, and linguists who have been carried out by researchers with an average value of 82.6%, this flipbook is in a good category because based on the interpretation of 81-100%, it is included in the "Very feasible" media category, with these results it can be concluded that the media flipbook of the characteristics of living things is very feasible to use.

5. The implementation carried out has gone well as seen from the results of interviews conducted with students who answered enthusiastically and all students followed the activities from start to finish even though it took a long time. So that the implementation is successfully carried out by attracting students' attention to follow the learning.

6. The learning outcomes of students on the material of the characteristics of living things using this flipbook are very good, this is indicated by the increase in scores produced by students during the post test because the score is higher than the pre test, which was originally 32.6 to 73.8. So, the flipbook of the characteristics of living things based on student learning outcomes is included in the category worthy of use in the classroom.

7. User responses, namely students, teachers and parents to the flipbook media developed with a percentage of 89.9% when viewed from the interpretation of these percentages including the category "Very feasible". So it can be concluded that according to the user this flipbook media is feasible for use. This is also supported by the results of interviews with enthusiastic students and teachers towards the use of this media in learning activities is very good and students have been very good at following learning activities.

8. Evaluation of activities using this flipbook is more thorough in writing, designing and determining the material to be taught. So that the flipbook will be easier for students to understand.

Suggestions

Based on the results of the study that has been done, namely the development of flipbook media on the material of the characteristics of living things, there are recommendations for schools, teachers and further researchers:

1. Flipbook media can be considered to be media in third grade elementary school for science learning activities, especially on the characteristics of living things topic.

2. This flipbook media can be a recommendation so that students can be more motivated to learn by using technology.

3. Develop flipbook media for learning different materials, different subjects, and different grades.

4. Researchers in conducting research activities are still lacking, especially in terms of material content due to limited time. It is hoped that future researchers can carry out another study with the same topic more optimally.

REFERENCES


PEMBELAJARAN-MENGENAL-RAGAM-BUDAYA-INDONESIA-BERBASIS-ANDROID.pdf


Hartanto,A. (2016). Pengembangan Media Augmented Reality Untuk Mata Pelajaran Biologi Pada Pokok Bahasa Sel. repository.upi.edu


