



Plant Parts and Their Functions Visualized Through E-Storybook Learning Media: Is It Feasible?

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ABSTRAK

Pembelajaran daring akibat pandemi Covid-19 memunculkan permasalahan pada peserta didik karena kurangnya media pembelajaran yang menunjang proses pembelajaran. Penelitian ini bertujuan untuk mengetahui rancang bangun media dan mengetahui kelayakan media pembelajaran E-Storybook pada materi bagian-bagian tumbuhan dan fungsinya pada muatan IPA Kelas IV Sekolah Dasar. Model pengembangan ADDIE merupakan model yang digunakan pada penelitian ini. Tahapan penelitian ini terdiri dari tahap analisis (Analyze), tahap perancangan (Design), tahap pengembangan (Development), tahap implementasi (Implementation), dan tahap evaluasi (Evaluation). Subjek penelitian ini adalah media pembelajaran E-Storybook. Teknik pengumpulan data menggunakan metode kuesioner. Data yang dikumpulkan di analisis secara deskriptif kuantitatif dan analisis data deskriptif kualitatif. Validasi produk dilakukan oleh 3 ahli yaitu ahli isi pembelajaran, ahli desain pembelajaran dan ahli media pembelajaran. Hasil pengembangan menunjukkan bahwa rata-rata skor validitas ahli isi yaitu 92% dengan kualifikasi sangat baik, rata-rata skor validitas ahli desain pembelajaran yaitu 93% dengan kualifikasi sangat baik, rata-rata skor ahli media pembelajaran adalah 95% dengan kualifikasi sangat baik dan rata-rata hasil dari 3 responden yaitu 92,7% dengan kualifikasi sangat baik. Dengan demikian media pembelajaran E-Storybook telah dinyatakan layak untuk digunakan dalam pembelajaran daring.

ABSTRACT

Online learning due to the Covid-19 pandemic raises problems for students due to the lack of learning media that supports the learning process. This research aims to know the design of the media and know the feasibility of E-Storybook learning media on plant parts material and its function in the science content of Grade IV Elementary School. The ADDIE development model is the model used in this study. This research stage consists of analysis stage (Analyze), design stage (Design), development stage (Development), implementation stage (Implementation), and evaluation stage (Evaluation). The subject of this study is the learning medium E-Storybook. Data collection techniques using questionnaire methods. The data collected in quantitative descriptive analysis and qualitative descriptive data analysis. Product validation is done by 3 experts, namely learning content experts, learning design experts and learning media experts. The results showed that the average validity score of content experts is 92% with excellent qualifications, the average validity score of learning design experts is 93% with excellent qualifications, the average score of learning media experts is 95% with excellent qualifications and the average result of 3 respondents is 92.7% with excellent qualifications. Thus the learning media of E-Storybook has been declared eligible for use in online learning.

1. Introduction

Online learning, considered as one of the methods of delivering learning materials between teachers and students, in the emergency of pandemic according to (Daheri et al., 2020; De Mauro et al., 2018; Rigianti, 2020). During the course of online learning found a problem in science learning that took place in grade IV elementary school. Science learning is related to how to find out about nature systematically, so that in science learning not only knowledge about facts, concepts, and principles, but there is a process of discovery. The process affects the results of learning in the form of scientific attitudes

and process skills according to (Agustini, 2020; Laksana, 2016; Taufiq & Rokhman, 2020). Science lessons are the concept of natural learning and have a very broad relationship related to human life. Science lessons play a role in the educational process as well as the development of technology. Science is a science that learns about the universe and its contents, as well as the events that occur in it developed by experts based on scientific processes and their reality (Hirça, 2013; Sujana, 2014). IPA is a process of discovery about nature in the form of facts, concepts or principles about nature conducted systematically (Astra et al., 2020; Kumala, 2016). From some of these opinions, it can be concluded that science lessons are sciences that study events that occur in nature by conducting observations, experimentation, inference, the preparation of theories so that students have knowledge, ideas and concepts organized about the environment, obtained from experience through a series of scientific processes, among others, investigation, preparation and presentation of ideas of the nature of science lessons.

The material presented in the IPA content is very extensive, especially in grade IV elementary school, one of which is the material of plant parts and their functions. Based on observations and interviews that have been conducted that on ipa content students are not considered to be able to understand the parts of plants and their functions to the maximum. Supported by research that has been done about plant parts and their functions that state this material is a sub material that requires clear visualization because students can learn about nature even indoors (Pahlelawati et al., 2020). In addition, learning media that is often used only in the form of learning videos obtained from youtube, the availability of learning media other than video in supporting the online learning process, the time of exposure of materials in online learning is very short, there is no use of technology with maximal to facilitate media exposure to students, boredom that plagues learners because of monotonous learning media, lack of motivation and interest in learning in following online learning. It also agrees with research results which states that the application of learning media that is still monotonous and less varied makes students tend to be inactive and lack of interaction during the learning process (Liana et al., 2020).

Referring to the problem, students need the right and flexible media. Media is a device used to convey / deliver learning messages (Arsyad, 2017). Whereas, learning media is everything that is used to help students with educators interact and learning resources in channeling and or receiving messages and information in a learning environment (Widiada et al., 2018). So that the learning media is a tool / device used to convey messages, feelings, messages, attention so as to encourage the teaching and learning process (Arsyad, 2017). The development of IPA content media is expected to help students in improving critical ways of thinking to follow online learning on plant parts material and its function of IPA content. Learning media is said to be flexible when it can be used anywhere, anytime, not thinking about where and when it is used. Learning media will be more interesting and more concise but not drain the essence of the material (Mustaqim et al., 2017). The selection of research that develops science learning media because it is in accordance with the characteristics of learners, in accordance with the needs of learners. Supported by research stated that science learning media byutilizing technology to the maximum can help support the learning process of students (Dwiqi et al., 2020). In line with the opinion science learning, especially in elementary school, will lead students to learn to find out for themselves the answers to questions that they find in the learning process and can be accounted for. One of the learning media that is considered suitable in the situation is the E-Storybook (Muliastri et al., 2019).

E-Storybook media can help learners in learning languages (Agustina, 2015). The results of this study showed 5% of students are still in the category of "Need Improvement", as many as 15% of students are in the category of "Developed" and 80% of learners are in the category of " Well Developed". While the other research states that storybooks effectively increase students' reading interest in reading with a score of -26,317 with a probability (sig) of 0.000 (Tarigan, 2018). As well as research stated that storybook media is worth developing for studentswith the results shown thefeasibility of illustrated storybooks on volcano eruption disaster mitigation based on the assessment of three expert lecturers, each obtained the following scores, 89.6 from material experts, 85.33 from media experts, 76 from linguists, 95.08 in small group trials and 88.6 in large group trials. When taken the average value of the validation test gets a value of 83.64, and the average value of the product trial gets a value of 91.87 (Suryaningsih & Fatmawati, 2018). While the research with the results of effective media is used as a companion book curriculum book 2013 used in the learning process in class V, especially the theme Of Our Friend Environment (Aditya Dharma, 2019). Because students experienced a change in the direction of better attitudes and learning outcomes, the attitude of 8.13 students was very effective; the interest in reading of 5.33 students was very effective; and the student learning outcomes of 2.69 were very effective. However, there are some disadvantages of pre-existing learning media, namely application-shaped media that costs a lot in the process of use, while learning media is still in print so it can not be applied in online learning, easily damaged and can not be stored for a long period of time and difficult to carry around. The difference with the research conducted is the content used ipa content, interesting media so as to motivate

learners in learning, the level of class tested, the subject used are plant parts and their functions, and visual media. Learning media products developed are easy to apply, do not cost much, can be used many times, easy to carry everywhere because it can be stored through a laptop or mobile phone, this media has also been declared feasible because it has passed the test by 3 experts and trials by 3 students.

The difference of this research with some of these studies is the peculiarities that appear in this medium that is developed with creation, creativity, interesting colors and simple design both theory and reality. E-Storybok learning media has the advantage of costs used relatively cheap because it can be stored with a single download, very accessible because it is in the form of pdf, anti-damage, easy to under everywhere, helps students to think critically and actively in observing the surrounding environment to find broader insights, can be accessed through laptops and mobile phones, and can save time. This study aims to develop learning media, know the design of the media and know the feasibility of E-Storybook learning media on plant parts material and its functions in the science content of Grade IV Elementary School.

2. Method

This research uses ADDIE research model as a development design consisting of 5 stages of implementation of addie model used in efforts to solve learning problems related to learning media that suits the needs and characteristics of learning. ADDIE model is a model that is prepared programmatically and systematically that serves to solve learning problems and related to learning resources that suit the needs, circumstances, and characteristics of learners (Tegeh, 2014). However, due to time constraints and implementation in the field, this research is only carried out until the development stage. The selection of addie model was chosen on the basis of systematic consideration and in accordance with the problem solving efforts found by adjusting the analysis of students and needs in the field. The ADDIE model provides an opportunity to implement the evaluation stage of the development process at each stage. This will have an impact on the quality of the products developed. The subject of this study is the E-Storybook learning medium. Data analysis used is quantitative and qualitative data analysis. The data collection method used is a non-test method. Non-test methods with questionnaire instruments are used to determine the feasibility of E-Storybook learning media products developed. This research is through the assessment stage conducted by 3 experts, namely learning content experts, learning media experts, learning media design experts. The results of the data analysis stage in the form of quantitative data analysis from the results of the acquisition of questionnaire data by 3 experts (experts in the content of lessons, design experts and experts in learning media) and through the individual trial stage involving 3 students who have 3 levels of achievement (high, medium and low achievement). Meanwhile, quantitative data is a qualification level of achievement questionnaire. The instrument grid assessment of E-Storybook learning media products shown in Table 1, 2, 3, and 4.

Table 1. Subject Content Expert Instrument Grid

No.	Aspects	Indicators	Item No	Number of Items
1.	Curriculum	Conformity of materials with basic competencies	1	1
		Conformity of materials with learning indicators	2	1
		Conformity of materials with learning objectives	3	1
		Accuracy of material	4	1
		Depth of material	5	1
		Completeness of materials	6	1
		Material attractiveness	7	1
2.	Material	Conformity of material with the characteristics of learners	8	1
		Materials supported with the right media	9	1
		Easy-to-understand material	10	1
		The concept presented can be clearly analogized	11	1
		Proper and consistent use of language	12	1
3.	Language	Language used according to the characteristics of learners	13	1
		Conformity of the problem with the purpose of learning	14	1
4.	Evaluation	Level of material difficulty	15	1
Amount				15

Table 2. Learning Design Expert Instrument Grid

No.	Aspects	Indicators	Item No	Number of Items
1.	Goal	Clarity of learning objectives	1	1
		Inconsistency between objectives, materials and evaluation	2	1
		Material delivery provides logical steps	3	1
2.	Strategy	Learning activities can motivate students	4	1
		Provides examples for understanding concepts	5	1
		Help reflect students on previous learning	6	1
		Provide students with opportunities to learn independently	7	1
3.	Evaluation	Provide training questions for concept understanding	8	1
		Problems presented in accordance with learning indicators	9	1
		Clarity of instructions on the workmanship of the problem	10	1
Amount				10

Source: (Suartama, 2016)

Table 3. Learning Media Expert Instrument Grid

No.	Aspects	Indicators	Item No	Number of Items
1.	Message Design	Theme consistency	1	1
		Readability of text	2	2
		Use of images that support learning materials	3,4	2
		Proper use of typefaces, font sizes and spaces	5	1
		Precise and harmonious composition and color combination	6	1
		Proper use of animations	7	1
		Matching and balanced background display	8	1
		Ease of optimization	9	1
2.	Optimization	Media can help learners in understanding materials	10	1
		Media can motivate learners in learning	11	1
3.	Accuracy, Current, Clarity	Students can use the media repeatedly	12,13	2
		Accuracy of materials in the media	14	1
		Material update in the media	15	1
Amount				15

Source: (Suartama, 2016)

Table 4. Individual Test Instrument Grid and Small Group Test

No.	Aspects	Indicators	Item No	Number of Items
1.	Message Design	Product design	1,2	2
		Readability of text	3,4	2
		Image clarity	5	2
2.	Material	Ease of understanding of materials	6	2
		Clarity of material description	7	2
3.	Operation	Ease of operation	8	2
4.	Motivation	Media encourages learners in learning	9,10	2
Amount				10

Source: (Suartama, 2016)

The data analysis method used in this study is quantitative and qualitative descriptive analysis method (Sugiyono, 2017). Quantitative descriptive analysis is used to process data obtained from questionnaires in the form of scores using the Likert scale as follows.

3. Result and Discussion

Results

Based on the product development model used in the development of this E-Storybook ADDIE development model consists of five stages, namely the analysis stage, design stage, development stage, implementation stage and evaluation stage. Analysis Stage Results (Analyze) the existence of needs analysis, content analysis and determination of basic competencies and indicators. 1) Analysis of student characteristics is done to know the characteristics of learners about their learning capacity, knowledge, skills and attitudes possessed by grade IV students. The method used to know the characteristics of learners is non-test with questionnaire instrument. Based on the results of the analysis of the distribution of questionnaires to students, it was concluded that the characteristics of grade IV students are students who are happy to learn by using electronic media that has interesting colors during home study. It is seen from the results of the questionnaire distributed to students that out of the 37 students overall answered happy to learn using simple media that is colored and interesting to know what media is needed and suitable with the product to be developed in the learning process for grade IV SD Negeri 4 Pemecutan. 2) What stage of content analysis is done the selection of learning materials that match the media to be developed in accordance with the analysis of the needs of learners and the abilities of students. The method used to analyze the content is an interview with a grade IV teacher at SD Negeri 4 Pemecutan. Based on this analysis, the material that corresponds to the media to be developed is plant parts and the function of IPA content. In content analysis, in addition to determining the material is also carried out identification of basic competencies and indicators on ipa content. 3) In environmental analysis and facilities observations were conducted at SD Negeri 4 Pemecutan. The results of the environmental analysis showed that it is suitable and feasible to develop E-Storybook learning media. In the environmental observation process shows that the school does not yet have electronic learning media that can support and activate students while studying.

After the analysis stage is completed then continued with the planning / design stage. In this design stage, the design is done in the form of Storyboard and Storyline. As well as media components use microsoft power point and paint. The steps taken at the planning stage are sketching drawings and illustrations, creating text and its contents, determining the layout of images and text, making E-Storybook covers and finishing stages of E-Storybook. After the design of E-Storybook learning media is completed then the next stage is the development. The development stage is the stage of working on everything that is at the design stage until it becomes a product that is ready to be tested. Activities in this stage of development include several stages, including making drawings and illustrations, creating text and its contents, determining the layout of images and text, making covers, finishing stages of E-Storybook and the final stage followed by the creation of questionnaires for respondents in this study. At this stage also conducted tests by 3 experts to find out the feasibility of the product developed.

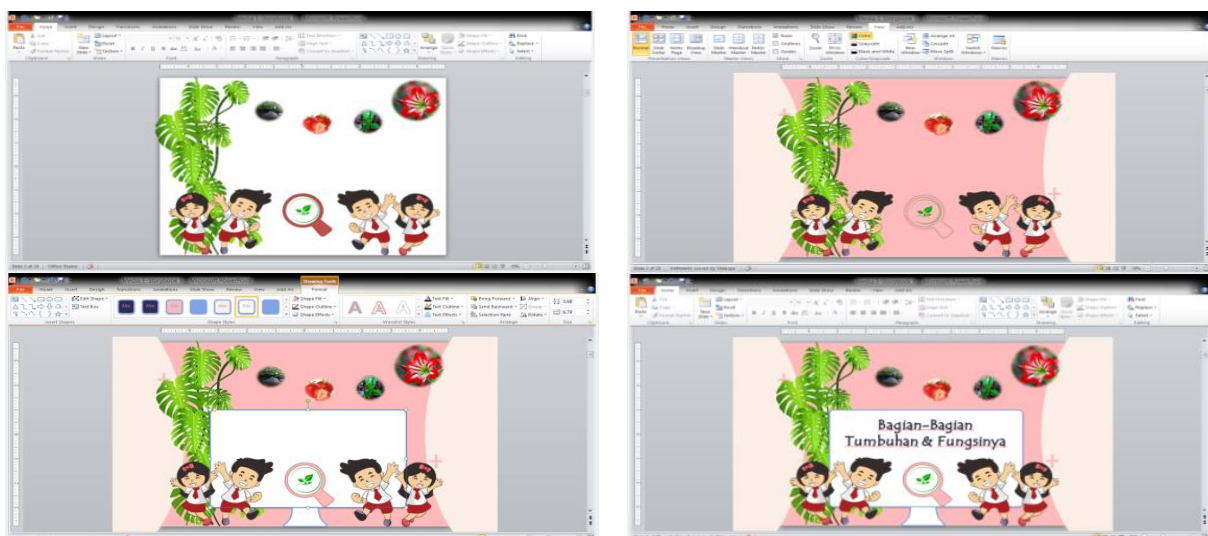


Figure 1. Development and Design Process E-Storybook learning media



Figure 2. Cover Creation Stage

The next stage is the implementation stage. In this implementation stage, it is a stage of applying the developed product to the test subjects involving grade IV students at SD Negeri 4 Pemecutan. The purpose of this implementation is done to know the user's response to the learning media E-Storybook material plant parts and functions. In addition to knowing the feasibility and attractiveness of a product that has been developed so that when tested on the subject then the product already has a better quality and worth using. The last stage is to evaluate. This stage is divided into formative evaluation and summative evaluation. Formative evaluation is done to collect data at each stage used for improvement and summative evaluation is done at the end of the program to know its influence on the learning outcomes of learners and the quality of learning at large. The product test stage was conducted first by 3 experts, namely subject content experts, learning design experts and learning media experts. Furthermore, after the media is declared viable then a product trial is conducted. However, this stage was conducted only until individual trials by 3 grade IV students at SD Negeri 4 Pemecutan. Instrument used in the assessment in the form of questionnaires. Product trial activities are conducted to determine the feasibility of the product being developed. The following is the exposure of the results of the test process by experts and individual trials.

Tabel 5. Percentage score of E-Storybook Learning Media Development Test Results

No	Test Subjects	Result (%)	Qualifications
1.	Subject Content Expert Test	92%	Excellent
2.	Test Learning Design Experts	93%	Excellent
3.	Learning Media Expert Test	95%	Excellent
4.	Individual Trials	92,7%	Excellent

Based on the product test process, the results obtained from the subject content experts obtained a percentage result of 92% with excellent qualifications. Learning design experts get a 93% percentage result with excellent qualifications. Learning media experts achieved 95% results with excellent qualifications. Individual trial results scored 92.7% with excellent qualifications. Thus, it can be concluded that E-Storybook learning media products are considered worthy of use in the learning process. In addition, the input of the product test process has been conducted. So the learning media E-Storybook undergoes changes in accordance with comments and suggestions by experts, and the individual trial stage is then carried out a revision stage to make the product better than before. The comments and revisions of the product are as follows.

Tabel 6. Comments and Revisions

No	Test Subjects	Comments	Revision
1.	Content Experts	On revised learning objectives and activities	Improving learning objectives and activities to fit the learning model
2.	Media Experts	Adapt to the objectives of the learning model	Improving objectives to fit the learning model
3.	Design Experts	Pictures of bred plants	Improve the image of plants in the media to be clearer and become more natural like the shape of plants in real life.

Table 7. Comments and Suggestions of Individual Trial Subjects

No	Test Subject Comments and Suggestions
1.	The text is too small, thank you.
2.	The picture is nice teacher and also very fun for me. Learning is also easy to understand, thank you teacher.
3.	Easy to understand and can help in learning

Discussion

Based on the results of the research that has been done, the development of E-Storybook learning media obtained excellent qualifications from the assessment stage that has been done and declared worthy of use in the learning process. Based on the questionnaire in the research development of Learning Media E-Storybook by experts in the content of subjects with questionnaires obtained a percentage of validity of 92% with excellent criteria. This is because the content of learning media in accordance with basic competencies, indicators and characteristics of learners, the material presented attracts attention and motivates learners in learning, especially in online learning. Learning media contains explanations that mean students understand and associate with real life, the material is presented not only in the form of text but also supported by images that attract the interest of learning and arouse the curiosity of learners. It is also similar to the opinion stated that the role of illustrated storybooks is very important, because it can help learners learn about nature, get to know others and the relationships that occur and the development of feelings (Adipta, 2016; Mol et al., 2009; Ratminingsih & Budasi, 2018).

The test of learning design experts with questionnaire results obtained a percentage of 92% with excellent criteria. This reason is because E-Storybook learning media has an attractive look by combining various colors, text layouts and proportional images so that the text is not drowned out by existing images. The size of the clear text and the images used look more real. The presentation agrees with the conditions that must be considered in an image that is 1) authentic, the image must honestly describe the situation as people see the actual object, 2) simple, the composition of the image should be clear, showing the points in the picture, 3) the relative size, the image can zoom in and out of the actual object, 4) the image should contain motion and deed, 5) not every good picture is a good medium. Must be in accordance with the learning objectives to be achieved (Hakim & Windayana, 2016; Susilowati, 2017; Syahrial et al., 2019). While the results of questionnaires by the test of learning media experts obtained a percentage of 95% and included in the criteria is very good. Because E-Storybook learning media provides a broader insight into the material presented both from content and images that agree with (Adipta, 2016) that the use of E-Storybook provides benefits to learners to be able to help learn vocabulary. This learning media product is also very good to use in the online and offline learning process because it is very easy to use and does not cost much in its use. Agree with (Arief S, 2018) about the advantages of using E-Storybook is the cost used relatively cheap, very accessible, anti-damage, easy to carry everywhere and can save time.

The results of individual trial assessment by 3 students with a total score of 280 and an average of 93.3% with a very good quaging, because the learning media provided is able to make the interest of learners learning is increasing because the media is supported by an attractive look, containing direct recognition with the support of images that fit the real form of real life, motivate a systematic storyline and clear discussion, easy to learn with simple and easy to understand words, virtually correct so that it can be used when learning online and offline, media can be stored easily and can be used repeatedly, reduce boredom when learning online with interesting learning, use of words and text layouts containing instructions to make learners learn more actively, message content that teaches learners to know living things more widely along with types of plant parts and can be used offline and improve creative thinking of learners by looking for other examples of the examples described.

Based on the data, it can be concluded that the learning media of E-Storybook IPA content of plant parts and their functions in grade IV at SD Negeri 4 Pemecutan in 2020-2021 has been declared eligible for use in the process of training both online and offline, supported by the results of a review of 3 experts and trials by 3 students with excellent qualifications. This is also supported by research conducted by Tarigan (Tarigan, 2018) showing that interest in reading can increase with illustrated storybooks. Meanwhile, according to Nugraheni (Nugraheni et al., 2019) that learning media using picture story books can be used individually or in groups. In agreement with Lubis (Lubis & Dasopang, 2020) stated that the learning presented by teachers can reduce the boredom of learners so that it can help to achieve learning goals easily. Implications for the development of E-Storybook learning media on the ipa content of plant parts material and its function as a learning medium that can be used in online and offline learning, Learning media is presented in a simple form but attracts the interest of learners because the right color

combination media, the exposure of materials accompanied by images make students unsaturated in learning, developed media can be one of the collection of electronic media, and help teachers to further open insights in developing and selecting interesting media in accordance with the characteristics of learners by utilizing technology especially to help bridge the online learning process, and has been supported by some relevant research that has been described

4. Conclusion

Based on the results of the discussion, it can be concluded that the learning media of E-Storybook Containing Science with plant parts material and its functions in grade IV at SD Negeri 4 Pemecutan is considered feasible and can be used in the learning process during online or offline learning. It is recommended for students to use and utilize E-Storybook learning media products in learning activities, especially ipa content of plant parts and their functions. This E-Storybook media can not only be utilized by individual learners when learning online but can also be used for group learning while offline. To teachers in order to apply learning media to the learning process and can develop similar learning media by utilizing technology. The headmaster is advised to provide facilities for teachers in developing learning media used to help the learning process of learners, especially in online learning during the pandemic. While to other paneliti suggested that the results of the research can be used as a relevant theoretical study in conducting similar development research and expected to continue research to the stage of product effectiveness.

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