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Development of Big Book Media Based on Augmented Reality Material on Structure and Function of Plant Parts for Class IV SDN Tlogo 02 Blitar

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A B S T R A C T

The aim of this research is to determine the validity, feasibility and attractiveness of big book learning media based on augmented reality on the structure and function of plant parts for class IV SDN Tlogo 02 Blitar Regency. This type of research uses Research and Development (RnD) with the ADDIE development model which has five stages, namely Analyze, Design, Develop, Implementation, Evaluation. The subjects of this research were 27 class IV students at UPT SDN Tlogo 02. The data collection techniques used in this research included interviews, questionnaires and documentation. This questionnaire is aimed at expert validators to test the validity of the media, teacher responses to test the suitability of the media, and student responses to test the attractiveness of the media being developed. The results of this research showed that the validity of big book media based on augmented reality material on the structure and function of plant parts obtained a total percentage of 88.18% with very valid criteria. Eligibility has a final score of 100% with very feasible criteria. The attractiveness of the big book media based on augmented reality regarding the structure and function of plant parts has a final score of 93.15% with very interesting criteria.

1. Introduction

Education is a learning process carried out in formal or non-formal institutions received by anyone from early childhood to old age both in school and outside of school. As stated in Law No. 20 of 2003, education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have spiritual religious strength, self-control, personality, intelligence, noble morals, and skills needed by themselves, society and the state.

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Science learning in the independent curriculum is more familiarly called IPAS (Natural and Social Sciences) is a lesson that studies a lot about the universe. IPA is a science that is based on natural phenomena using scientific methods.(Kumala, 2016). Ciptaningtyas explained that science learning also provides opportunities for students to develop their level of thinking about problems in their surrounding environment.(Kristina et al., 2023). One of the science learning materials in grade IV in the independent curriculum is material on the structure and function of plant parts. This material explains several parts of plants, how the structure of each part of the plant is, and the function of these parts of the plant.

Learning media is a tool in teaching and learning activities that helps teachers to deliver lesson materials. According to(Magdalene, 2021)Learning media is anything that can convey messages through various channels, can stimulate the mind, and the will of students so that it can encourage the creation of a learning process to add new information to students so that learning objectives can be achieved properly. Currently, the use of learning media in teaching and learning activities can help students to better understand the material presented by the teacher so that learning objectives can be achieved optimally. Media by utilizing technology in the current era is one of the factors that promises success in the learning process. Teachers must be able to keep up with technological advances so as not to be left behind in information from students.

It is often found in several schools that the use of information and communication technology in learning is not optimal. The use of learning media is also inappropriate and less varied, this affects the enthusiasm and motivation of students in participating in learning. Science learning is delivered using appropriate learning media, which will increase the effectiveness of teaching and learning activities. Seeing the various innovations, the world of education has begun to compete to create various learning media. Various media used as innovations in learning are in the form of physical media and technology-based media. Physical media can be seen, observed and held directly. One of the technology-based media that can be used is Augmented Reality-based media.

One of the media that can be used for science learning is the Big Book media. Big book media is a visual media in the form of books with various sizes, for example A3, A4, or A5, consisting of 10-15 pages, containing elements of writing and images that can be seen by all students, attracting students' interest in reading, and having simple and clear sentences.(Lubis, 2021). Big book media has special characteristics such as colorful and attractive images.(Dewi & Yanti, 2021). From the above opinion, it can be concluded that Big Book learning media is a learning media in the form of a large book containing writing, large, colorful and attractive pictures.

Based on the facts in the field, researchers found several problems at UPT SDN Tlogo 02 Blitar Regency. Researchers conducted research at UPT SDN Tlogo 02 on Thursday, November 2, 2023 which was carried out using observation techniques with students and interviews with class IV teachers at UPT SDN Tlogo 02 Kanigoro. There were several problems, namely technology-based learning

media that were less varied, lack of learning media that could make the learning atmosphere more interactive and enjoyable, teachers only used LCD projectors as an innovation so that students did not get bored in learning, learning resources from LKS and textbooks, students tended to be passive and felt bored. This made the classroom atmosphere not conducive, students did not focus on learning, felt bored during learning, so that students easily forgot the material that had been delivered by the teacher because students did not understand the material.

Based on the problems that exist in UPT SDN Tlogo 02, one of the researcher's efforts to overcome problems related to learning media on the material of structure and function of plant parts is to develop Big Book learning media based on Augmented Reality. AR (Augmented Reality) is a technology that combines two-dimensional and/or three-dimensional virtual objects into a real environment. AR can be displayed on various devices such as mobile phones.

*Big Book*based on Augmented Reality is a combination of large books with AR technology. This augmented reality-based big book was developed to make it easier for users to understand the material in the book by displaying 3-dimensional objects on 2-dimensional images listed in the book. This learning media has never been applied in UPT SDN Tlogo 02, as well as a solution to the problems that exist in SDN Tlogo 02 for grade IV students.

In previous research conducted by(Riyanto et al., 2024)entitled Development of QR Code-Based Big Book Media to Improve Early Reading Skills of Elementary School Students have similarities, namely both using media in the form of Big Books, the difference lies in the material and the addition of Augmented Reality technology. For previous research, it was only in the form of Big Books, while in this study it was developed into a Big Book based on Augmented Reality. In previous research conducted by(Muzdalifah & Subrata, 2022)entitled Development of Big Book Based on Local Wisdom for Early Reading Learning in Elementary School has similarities with the media that I developed, namely both using Big Book media. The difference lies in the material and the addition of Augmented reality technology in the big book.

Based on the data presented above, a study was conducted entitled "Development of Augmented Reality-Based Big Book Learning Media on the Material of Structure and Function of Plant Parts for Grade IV Students of SDN Tlogo 02, Blitar Regency". The purpose of this study was to determine the validity, feasibility, and attractiveness of augmented reality-based big book learning media on the material of structure and function of plant parts for grade IV of SDN Tlogo 02, Blitar Regency.

2. Methodology

This type of research uses Research and Development (RnD). Research and development is research used to produce certain products, and test the effectiveness of the product.(Sugiyono, 2016). This study uses the ADDIE

development model developed by Robert Maribe Branch. The ADDIE development model has five stages, namely Analyze, Design, Develop, Implementation, Evaluation.(Setiawan et al., 2021). The subjects of this study were 27 students of grade IV of UPT SDN Tlogo 02. The data collection techniques used in this study were non-test. The non-test data collection techniques used in this study were interviews, questionnaires and documentation. This questionnaire was addressed to expert validators to test the validity of the media, teacher responses to test the feasibility of the media, and student responses to test the attractiveness of the media developed.

The questionnaire data obtained from expert lecturers and class teachers were then converted into qualitative data by scoring using a Likert scale to assess the validity and feasibility of the learning media. According to Bahrul, et al.(in Pranatawijaya et al., 2019)Likert scale is a scale used to measure the perception, attitude or opinion of a person or group regarding an event or social phenomenon. The measurement of variables is described into variable indicators as in the following Table 1.

Table 1. Likert Scale Assessment Categories

No.	Score	Information
1.	Score 4	Very good/very decent
2.	Score 3	Worthy/good
3.	Score 2	Not worthy/not good
4.	Score 1	Disagree/very bad

Source:(Sugiyono, 2022)

To test the validity and feasibility questionnaire in the development of augmented reality-based big book media, it is done by comparing the number of scores given by the validator (∑x) with the number of scores that have been set in the learning model validation questionnaire (n). The formula is as follows.

$$P = \frac{\sum x}{n} \times 100\%$$

Information :
P = percentage score
∑x = number of answers for each respondent
N = Maximum or ideal score

Table 2. Level of achievement and qualifications

No.	Achievement Level	Qualification
1.	76% - 100%	Eligible (no revision needed)
2.	56% - 75%	Good enough (no revision needed)
3.	40% - 55%	Not suitable (needs revision)
4.	0 – 39%	Not suitable (needs revision)

Source:(Naila Muna & Wardhana, 2022)

The analysis of the attractiveness of the augmented reality-based big book media was obtained from the student response questionnaire, then analyzed using quantitative data to test the effectiveness of the augmented reality-based big book

learning media. The answers from the student responses were calculated using the Guttman scale. This type of measurement scale gets firm answers such as "yes-no", "true-false", and others.(Sugiyono, 2022). The following table shows the research achievement criteria for student responses to media attractiveness.

Table 3. Student Response Criteria

No.	Level	Qualification
1.	90%-100%	Very interesting
2.	75%-89%	Interesting
3.	65%-74%	Quite interesting
4.	55%-64%	Less attractive
5.	0-54%	Very Less Interesting

Student responses were carried out using the Guttman Scale. According to Fatimah and Puspanintyas, the Guttman Scale is a scale that only provides two answer choices, for example yes–no, good–bad, ever–never, and so on.(Parinata & Puspaningtyas, 2021). The following are the Guttman Scale assessment categories developed by researchers and made in the form of a checklist (√) which is presented in the following table 4:

Table 4. Guttman Scale assessment categories

No.	Score	Symbol	Information
1.	1		Yes
2.	0		No

The average percentage of components is calculated using the following formula:

$$P = \frac{\sum X}{n} \times 100\%$$

Information :
P = Percentage of response
$\sum X$= the sum of the scores for each criterion selected by the student
n = maximum or ideal score

The development of big book media based on augmented reality is said to be effective if the level of student interest reaches > 65%.

3. Results and Discussion

Results

A. Description of Analysis Phase Results (Analyze)

The development of big book learning media based on augmented reality on the material of structure and function of plant parts for grade IV begins with the stage

of analyzing what needs are needed in learning. This stage is divided into 4, namely validation of performance gaps, formulating instructional objectives, analyzing student characteristics, and identifying the sources needed. The results of these steps are described as follows.

a) Performance Gap Validation

At this stage, the researcher conducted an interview with a class IV teacher at SDN Tlogo 02, Blitar Regency on Thursday, November 2, 2023. An interview is a process of gathering information between the interviewer and the respondent which aims to obtain the required data.(Damayanti et al., 2022). From the results of interviews with grade IV teachers, several problems were found in science learning in grade IV, namely technology-based learning media are less varied, lack of learning media that can make the learning atmosphere more interactive and enjoyable, teachers only use LCD projectors as an innovation so that students do not get bored in learning, learning sources from LKS books and textbooks, students tend to feel passive and bored.

b) Formulating Instructional Objectives

After finding several problems in learning science for grade IV on the structure and function of plant parts, researchers know that researchers need to develop technology-based learning media that can arouse students' interest and motivation in participating in learning activities in class.Learning media is a tool that can help the teaching and learning process so that the meaning of the message conveyed becomes clearer and educational or learning goals can be achieved effectively and efficiently.(Nurrita, 2018). Learning media plays a role in supporting teacher and student activities in all cognitive task completion processes.(Saleh & Syahruddin, 2023).

The researcher then had the idea to develop a big book learning media based on augmented reality on the material of the structure and function of plant parts for grade IV. According to Solehuddin's opinion(Prawiyogi et al., 2021)states that big book is a picture book that is chosen to be enlarged and has special qualities including large images, there is repeated writing, contains planned vocabulary and some are repeated, has a simple storyline. While Augmented Reality is a technology that can improve perception and interaction between the virtual world and the real world, with 3 distinctive characteristics, namely: 1) interactive, 2) real-time, 3) displays objects in 3 dimensions(Yusup, A et al., 2023).Through the big book media based on augmented reality developed by researchers, fourth grade students can be more active and not feel bored in following the learning. Students are also more focused in following the learning so that students find it easier to understand the material presented.

c) Student Characteristics Analysis

This student characteristic analysis is conducted to determine the differences in student characteristics to then be adjusted to the augmented reality-based big book learning media that has been developed. This needs to be done so that learning can run optimally so that students obtain information that is in accordance with what the teacher wants.(Kusmayadi et al., 2017). From the results of the analysis

conducted on grade IV students of SDN Tlogo 02 Blitar Regency, several diverse student characters were found ranging from attitudes, skills and levels of knowledge possessed by students. From the various findings of these diverse student characters, they were used as input in developing augmented reality-based big book media on the material of the structure and function of plant parts for grade IV of SDN Tlogo 02 Blitar Regency.

d) Identifying the Resources Needed

In this step, the identification of the sources needed to complete the entire process of developing augmented reality-based big book media using the ADDIE model is carried out. The sources needed are the content/material in the media, the technology used in the media, the facilities needed, and the people who support the media development process. The explanation is as follows.

a) Content/material contained in the media

At this stage, analysis is carried out on the material to be achieved, namely the material on the structure and function of plant parts.Material analysis is carried out by identifying the main material that needs to be taught, collecting and selecting relevant material, and reorganizing it systematically.(Mulyatiningsih, 2016).The following are the learning achievements and learning objectives to be achieved.

1. Learning Outcomes
   Students learn about plant parts and their functions
2. Objective
   a. After learning to use an augmented reality-based big book about plant body parts, students are able to identify plant body parts correctly.
   b. After playing while learning using an augmented reality-based big book about plant body parts, students are able to describe the functions of plant body parts correctly.

b) Technology

Technology is the totality of means to provide goods necessary for the continuity and comfort of human life.(Ismail, 2020).Technology can be utilized to support the implementation of the learning process. In this study, researchers used augmented reality technology to develop big book media.

c) Facility

The facilities used in augmented reality-based big book media include mobile phones and internet access.

d) Humans who support the media development process

Parties supporting the development of augmented reality-based big book media include lecturers and teachers as validators, and students as the targets of this research.

B. Design Phase Result Description

a) Teaching Material Planning

At this stage, media selection is carried out that is in accordance with the material and characteristics of students. This is because learning media is a medium for

conveying messages from teachers to students and also as a means of communication between teachers and students so that it is necessary to adjust between the selected media, learning materials and characteristics of students in the class.(Inayati & Mulyadi, 2023). Then compile a teaching module that contains things used in the learning process. The teaching module is useful for teachers as a form of learning implementation guideline that has been adjusted to the skills and indicators to be achieved during the learning process in the classroom.(Mukminin et al., 2019). This teaching module is used as a guideline in implementing learning during the implementation of augmented reality-based big book media on the material of the structure and function of plant parts.

b) Preparation of Question Instruments

The stage of compiling this question instrument is based on the results of material analysis that is adjusted to learning objectives. This worksheet is used to measure students' understanding of the learning material.

c) Preparation of Assessment Instruments

In the stage of compiling the assessment instrument, the researcher created 5 questionnaires. 4 questionnaires used the Likert scale and 1 questionnaire used the Guttman scale.According to Rahayu(Efendi et al., 2021)A questionnaire is a set of questions that are logically structured in relation to research problems.The following is a questionnaire that has been compiled by researchers, including:

a) Questionnaire for media validation test
b) Questionnaire for material validation
c) Questionnaire for language validation.
d) Teacher response questionnaire related to the suitability of learning media.
e) The questionnaire addressed to students was related to media attractiveness.

d) Media Design

This media design stage is carried out by designing a big book meda based on augmented reality that will be developed. At this stage, researchers design media content based on material analysis that will be included in the big book media.

C. Description of Development Phase Results

This development stage includes developing learning media and validation by media, material and language experts.

a) Developing Learning Media

This augmented reality-based big book media on Plant Body Parts and Their Functions was created using a combination of Canva and Assemblr applications. The Canva application is used to layout and design the appearance of the big book, while the Assemblr application is used to create AR-based media. The following are the stages of creating augmented reality-based big book media on plant body parts and their functions.

a) Designing and Layout of Big Book

The big book media is designed using the Canva application. This design is carried out online through the Canva website. This big book is set with the contents using the Bree Serif font with a letter size of 20 pt and a spacing of 1.4. The following are the stages of designing and laying out the appearance of the big book.

1. Opening the websitehttps://www.canva.com/

The first step in creating this big book media is to enter the Canva application or website. If you are using a cellphone, you can do this by installing the Canva application on the Google Playstore first, or you can directly access the websitehttps://www.canva.com/via chrome. If you are using a laptop, the Canva application can be accessed via its websitehttps://www.canva.com//or enter Chrome first then search with the keyword "canva".

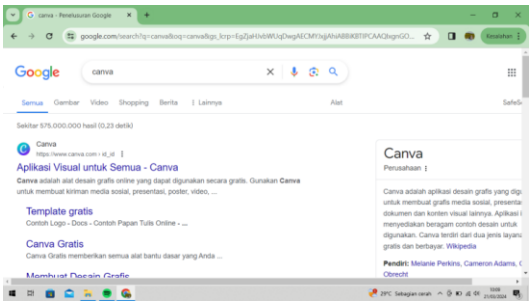


Figure 5. The entrance view to the Canva website

2. Click the login or register menu first if you don't have an account.

After entering the Canva website, the next step is to log in or register first if you don't have an account.

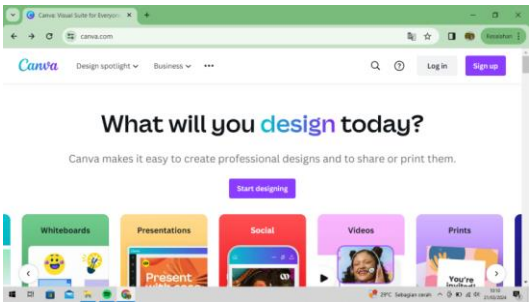


Figure 6. Canva homepage view before logging in

3. Click the create design menu and select the desired document size.

After successfully logging into the Canva account, the next step is to select "create a design", there will be a choice of document sizes to be created. In the big book that the author designed, it uses an A4 document.

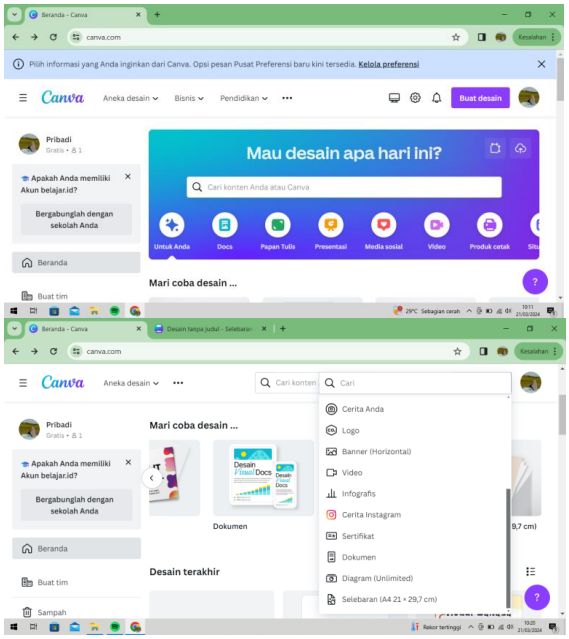


Figure 7. Canva homepage view after logging in

4. Design a big book according to your wishes

After selecting the document size, there will be a blank display. That's where the process of editing big book media can begin. There are various tools that can be used to support the creation of this big book media, including tools used to edit text, upload the content used, select the appropriate template, and select various media elements needed.

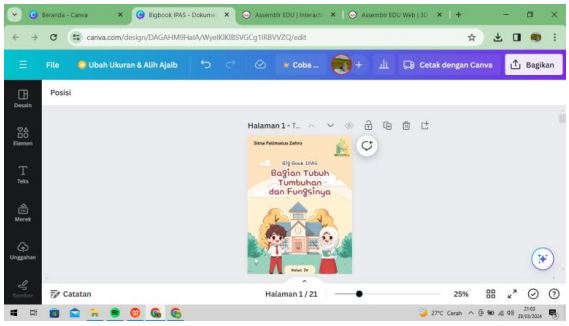


Figure 8. Big book media design process display

After designing the appearance of the big book media, the next step is to prepare the AR media that will later be input into the big book media. The stages of making AR-based media will be described in the explanation below.

b) Creating AR-based Media

This AR-based media contains a 2D depiction of the material Plant Body Parts and Their Functions. The following is a description of the stages of making AR-based media using the Assemblr application.

1. Opening the websitehttps://www.assemblrworld.com/.

The first step in creating augmented reality-based media is to enter the Assemblr application or website. If you are using a cellphone, you can do this by installing the Assemblr application on the Google Playstore first, or you can directly access the websitehttps://www.assemblrworld.com/via chrome. If you are using a laptop, the Assemblr application can be accessed via its websitehttps://www.assemblrworld.com/or enter Chrome first then search with the keyword "assemblr".

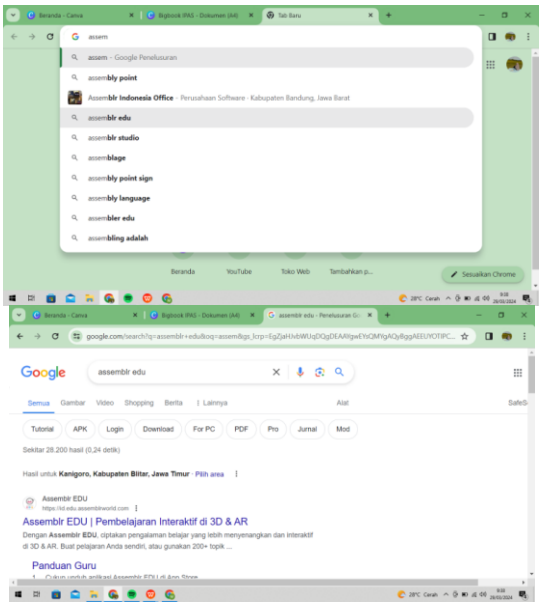


Figure 8. Access the Assemblr website

2. Click the login or register menu first if you don't have an account.

After entering the Assemblr website, the next step is to log in or register first if you don't have an account.

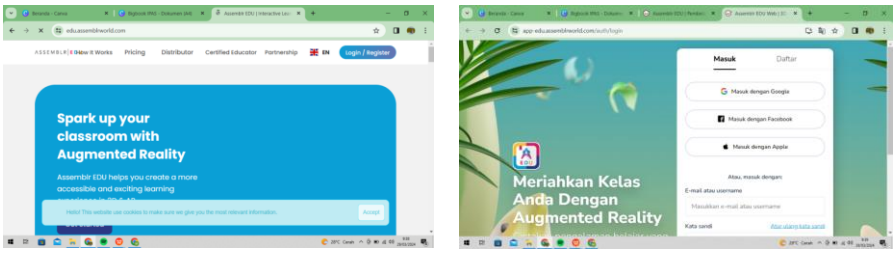


Figure 9. Assemblr website homepage view

3. Click the "create your creation" menu then select the "create from scratch" menu.

Once logged in, click on the “project” section then select “create your creation” and “create from scratch” to start creating AR media.

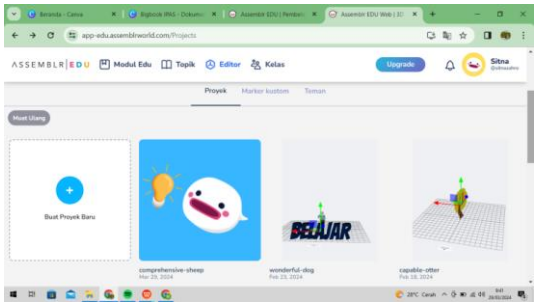


Figure 10. Initial process view before AR creation

4. Create augmented reality according to your wishes and needs.

After selecting "create from scratch", there will be a blank display. That's where the AR editing process can begin. There are various tools that can be used to support the creation of this AR, including tools that contain both 2D and 3D items. In addition to templates, editors can also insert their own items. There are also tools to change the background, give animation effects, and so on.

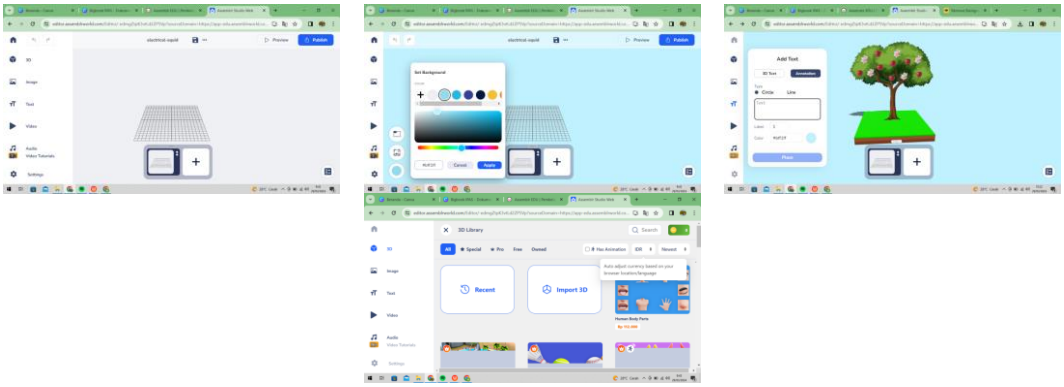


Figure 11. AR editing display and Assemblr tools

In the media developed by researchers, there are 2 scenes containing images of plant body parts and their functions as well as flower structures. The first scene contains images consisting of plant body parts in the form of roots, stems, leaves, flowers, and fruits. This media also provides material notes in the form of functions for each part of the plant body. While the second scene contains images of flower structures along with notes on the names of the flower parts.

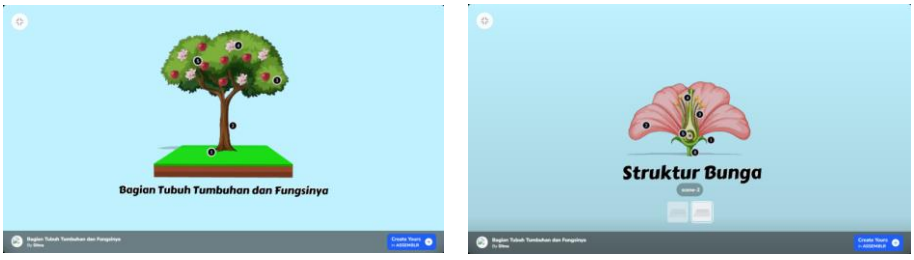


Figure 12. Display of AR media developed by researchers

5. Click the save button to save and the publish button to share our AR via QR code and link.

The final step of creating AR is saving the media. Click share to share the AR media that has been developed. At this stage, the media description, media title, media cover, and AR type will be filled in before being ready to be published. This AR can be published via a link or QR code.

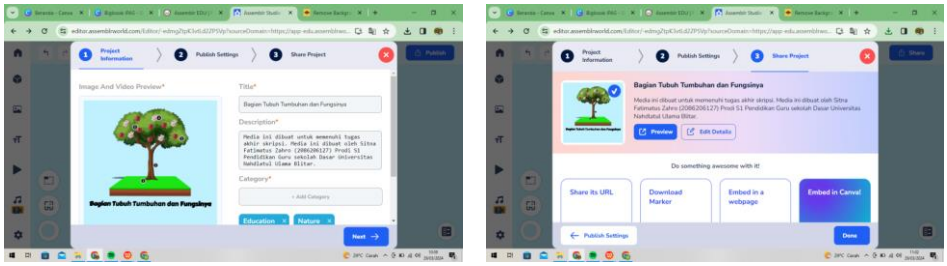


Figure 12. AR publication view

6. Incorporating AR-Based Media into Big Book

After finishing designing the appearance of the big book and AR-based media, the next step is to combine the two. This AR-based media can be accessed via QR code or via link. So that the QR code or link obtained from the AR-based media that has been created is input into the big book media in the material section. Students can access this media after reading the material that has been provided. This AR-based media is a reinforcement of students' understanding of the material they have read. Where through this AR-based media, students' learning methods will be more interesting and enjoyable.

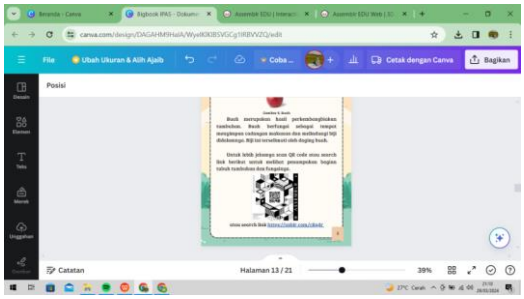


Figure 13. Combined display of AR-based media into big book media

7. Storing Big Book Media

The last step in creating AR-based big book media is to save the media. Click share then click download then select save as PDF to save the AR-based big book media that has been developed. AR-based big book media is ready to be printed.

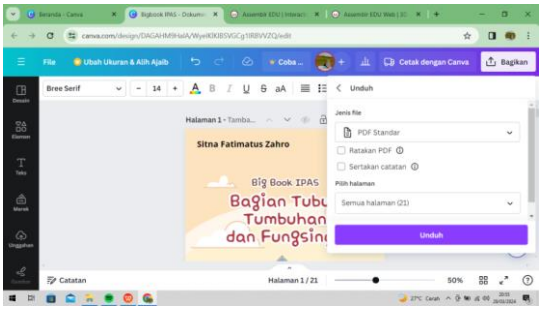


Figure 14. Display of the process of saving AR-based big book media

b) Expert Validation of Media, Material and Language and Teacher Response to Media Suitability

Validation is carried out to determine expert assessments of the learning media that has been developed and the validation results will later be used as a basis for revising the media that has been developed in accordance with the suggestions and input provided.(Pramesti et al., 2023). Assessments from media, material and language experts are the basis for whether this product is suitable for use or not. Experts provide suggestions for augmented reality-based big book media. The suggestions given by experts aim to make the developed media suitable for field testing. The data is described as follows.

a) Media Expert Validation Questionnaire Data

This media validation was carried out directly by meeting the lecturer as a media expert. On Friday, June 7, 2024, media expert validation was carried out. The media expert evaluated the augmented reality-based big book product on the structure and function of plant parts based on the available assessment aspects along with several suggestions given regarding the media. The results of the media validation can be seen in the table below.

Table 5. Media Expert Validation Results

Assessment aspects		Assessment indicators	Evaluation			
			1	2	3	4
			TL	KL	L	SL
A. Functions and Benefits	1.	Clarify in delivering material			√	
	2.	Makes it easier to deliver material				√
	3.	Arousing students' interest and motivation in learning				√
B. Visual Aspects of Media	4.	The appeal of media design				√
	5.	The attractiveness of media display			√	
	6.	The images used are in accordance with the theme				√
	7.	The image used is quite clear				√
C. Color	8.	The integration of colors used				√
	9.	Conformity of color composition and writing				√
	10.	The attractiveness of color in media				√
D. Language Aspects	11.	Accuracy of the language used			√	
		Total score	-	-	3	8

	Score × scale	0	0	9	32
	Total number		41		

Based on the assessment results in the table above, it can be seen that the final value obtained from the media expert assessment results is:

$$P = \times 100\% = \times 100\% = 93.18\ \% \frac{\sum x}{n} \frac{41}{44}$$

Based on the guidelines for converting quantitative to qualitative data, the validation of big book media based on augmented reality on the structure and function of plant parts is included in the eligibility criteria.This is in line with research conducted by Hapsari & Wulandari,(2020)which developed an augmented reality-based book received a score from media experts of 93.3% and was included in the valid/feasible category.However, there are still some things that need to be improved. The suggestions given by media experts are as follows.

1. The learning video is customized and created as a QR Code
2. The image on the media is enlarged
3. More practice questions have been made

Based on the assessment of media experts, it was concluded that the big book media based on augmented reality material on the structure and function of plant parts was worthy of being tested with revisions according to suggestions.

b) Subject matter expert validation questionnaire data

The validation of the material was carried out on Friday, June 7, 2024. This validation was carried out directly by meeting the material expert lecturer. The material expert directly evaluated the augmented reality-based big book media product on the structure and function of plant parts based on the available assessment aspects along with several suggestions given regarding the material. The results of the material validation can be seen in the table below.

Table 6. Results of Material Expert Validation

Assessment Aspects	Assessment Indicators	Evaluation			
		1	2	3	4
		TL	KL	L	SL
A. Content/Material	1. Compliance of materials with CP and TP			√	
	2. Clarity of material			√	
	3. Completeness of materials				√
	4. The material is delivered systematically				√
B. Lessons	5. Provide opportunities for students to practice independently			√	
	6. The material presented is interrelated			√	
	7. Suitability of materials to student development				√
	8. Ease of understanding the material				√
C. Language and Topography	9. Language accuracy			√	
	10.Text accuracy			√	

Total score	-	-	6	4
Score × scale	0	0	18	16
Total number		34		

Based on the assessment results in the table above, it can be seen that the final value obtained from the media expert assessment results is:

$$P = \times 100\% = \times 100\% = 85\ \% \frac{\sum x}{n} \frac{34}{40}$$

Based on the guidelines for converting quantitative to qualitative data, the validation of material in the augmented reality-based big book media on the structure and function of plant parts is included in the feasible criteria.This is in line with research conducted byTrisnaningsih & Maryani, (2018)which also uses material on the structure and function of plant parts and gets a percentage of 87.5 with a very feasible/valid category.The suggestions from the material experts regarding the media developed are as follows.

1. The material is made more extensive and complete
2. Images are also reproduced according to the material
3. Addition of direct practice questions with plants

Based on the assessment of material experts, it was concluded that the material in the augmented reality-based big book media on the structure and function of plant parts was worthy of being tested with revisions according to suggestions.

c) Language Expert Validation Questionnaire

Language validation was carried out on Friday, June 7, 2024. This validation was carried out directly by meeting with a language expert lecturer. The language expert directly evaluated the augmented reality-based big book media product on the material on the structure and function of plant parts based on the available assessment aspects along with several suggestions given regarding language. The results of the language validation can be seen in the table below.

Table 7. Results of Language Expert Validation

Assessment Aspects		Assessment Indicators	Evaluation			
			1	2	3	4
			TL	KL	L	SL
A.	**Straightforward**	1. The accuracy of sentence structure to represent the message and information to be conveyed				√
		2. The effectiveness of the sentences used			√	
		3. The standard of the terms used is in accordance with the function			√	
B.	**Communicative**	4. Facilitate understanding of messages and information			√	
		5. Clarity of the text used				√
		6. Suitability of the text used with the font size				√
		7. Match the text to the typeface			√	
C .	**Complianc**	8. Compliance with the intellectual				√

	e with student developme nt	development of students 9. Suitability to the emotional level of students				√
D.	**Conformity to language rules**	10. The correctness of the grammar used 11. Accuracy of the spelling used			√ √	
		Total score	0	0	6	5
		Score × scale			18	20
		Total number		38		

Based on the assessment results in the table above, it can be seen that the final value obtained from the media expert assessment results is:

$$P = \times 100\% = \times 100\% = 86.36\ \% \frac{\sum x}{n} \frac{38}{44}$$

Based on the guidelines for converting quantitative to qualitative data, the validation of the language used in the augmented reality-based big book media on the structure and function of plant parts is included in the eligibility criteria.This is in line with research conducted by Maulidya(2023)which received a score from linguists of 3.68 on a scale of $3.25 \leq X \leq 4.00$, indicating valid and feasible criteria.However, there are still some things that need to be improved. The suggestions given by linguists are as follows.

1. Use a font style that is easy for students to read.
2. Foreign terms are in italics

Based on the assessment of language experts, it was concluded that the language used in the augmented reality-based big book media on the structure and function of plant parts is worthy of being tested with revisions according to suggestions.

d) Teacher Response Questionnaire Data on Media Suitability

The teacher response questionnaire was administered on Monday, June 10, 2024. The questionnaire was administered directly by meeting teachers as practitioners. Teachers directly evaluated the augmented reality-based big book media product on the material on the structure and function of plant parts. based on the available assessment aspects along with several suggestions given regarding language. The results of the teacher response questionnaire can be seen in the table below. Based on the assessment results in the table above, it can be seen that the final value obtained from the media expert assessment results is:

$$P = \times 100\% = \times 100\% = 100\ \% \frac{\sum x}{n} \frac{44}{44}$$

Based on the guidelines for converting quantitative to qualitative data, the feasibility of big book media based on augmented reality material on the structure and function of plant parts is included in the feasibility criteria. This is in line with research conducted by (Al-Farisy et al.,(2023)which received a teacher response percentage of 96.25% and is included in the category that is feasible when used in

learning. But there are still some things that need to be improved. The teacher's suggestion is to add one or two questions in the form of descriptions to the practice questions. Based on the teacher's assessment, it was concluded that the feasibility of the augmented reality-based big book media for the material on the structure and function of plant parts is feasible to be tested with revisions according to suggestions.

Table 8. Results of Teacher Responses to Media Suitability

Assessment aspects	Assessment indicators	Evaluation			
		1	2	3	4
		TL	KL	L	SL
A. Appearance	1. Clarity of text				√
	2. Image clarity				√
	3. The attractiveness of the image				√
	4. Conformity of image to material				√
B. Presentation of material	5. Completeness of materials				√
	6. Clarity of sentences				√
	7. Clarity of terms				√
	8. Suitability of examples to material				√
C. Benefits	9. Ease of learning				√
	10. Interest in using media				√
	11. Increased learning motivation				√
	Total score				11
	Score × scale	0	0		44
	Total number		44		

D. Implementation Stage Description

At the implementation stage, researchers conducted a trial of the developed product. The implementation of augmented reality-based big book media was carried out to determine students' responses to the attractiveness of augmented reality-based big book media because if students are interested in this learning media, it is expected that students will be more active and not feel bored in learning so that the material presented can be easily understood. The following is a description of the implementation stage that has been carried out.

1. Student Response Questionnaire Data on Media Appeal

The student response questionnaire was administered on Wednesday, June 12, 2024. This questionnaire was administered directly after the researcher implemented the augmented reality-based big book media on the structure and function of plant parts. The researcher provided the questionnaire sheets directly to the students to fill out. Students immediately filled out the questionnaire that had been given regarding the students' responses to the attractiveness of the augmented reality-based big book media on the structure and function of plant parts used in learning. The results of the student response questionnaire can be seen in the table below.

Table 9. Student Interest Results

Respondent Code	Questionnaire indicators						Total Score
	1	2	3	4	5	6	
1	1	1	1	1	1	1	6
2	1	1	1	1	1	1	6
3	1	1	1	1	1	1	6
4	1	1	1	1	1	1	6
5	1	1	1	1	1	1	6
6	1	1	1	1	1	1	6
7	1	1	1	1	1	1	6
8	1	1	1	1	1	1	6
9	0	1	1	1	1	1	5
10	1	1	1	1	1	1	6
11	1	1	1	1	1	1	6
12	1	1	1	1	1	1	6
13	1	1	1	1	1	1	6
14	1	1	1	1	1	1	6
15	1	1	1	1	1	1	6
16	0	1	1	1	1	1	5
17	1	1	1	1	1	1	6
18	1	1	1	1	1	1	6
19	1	1	1	1	1	1	6
20	1	1	1	1	1	1	6
21	1	1	1	1	1	1	6
22	0	1	1	1	1	1	5
23	1	1	1	1	1	1	6
24	1	1	1	1	1	1	6
25	1	1	1	1	1	1	6
26	1	1	1	1	1	1	6
27	1	1	1	1	1	1	6
Total score amount							159

Based on the assessment results in the table above, it can be seen that the media attractiveness results obtained are the final value:

$$P = \times 100\% = \times 100\% = 93.15\ \% \frac{\sum x}{n} \frac{159}{162}$$

Based on the guidelines for converting quantitative to qualitative data, the attractiveness of the augmented reality-based big book media on the structure and function of plant parts falls into the very good criteria.This is in line with research conducted by Abdilah & Wulandari(2024)which received a media interest score from students of 93.7% and was included in the very interesting category.Based on this assessment, it can be concluded that the augmented reality-based big book media on the structure and function of plant parts is interesting to use.

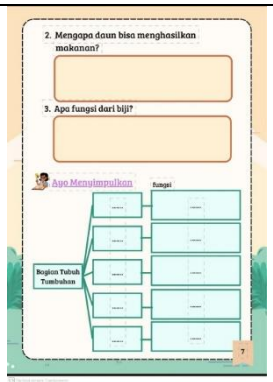
E. Evaluation Stage Description

This stage is carried out to evaluate the products that have been developed. After being assessed by experts and practitioners and tested to determine students' responses to the attractiveness of the media, the researcher will refine the media according to the suggestions given regarding the media. This product revision was carried out after receiving an assessment by experts and teachers. There are

several things that were revised from the augmented reality-based big book media on the structure and function of plant parts, namely videos that were adjusted and made into QR Codes, additional materials, additional images related to the material, and additional practice questions, using a letter model that is easy for students to read, foreign terms are printed in italics. For more details, product revisions can be seen in the table below.

Table 10. Big book view before and after revision

NO	Before Revision	Suggestion	After Revision
1.		The learning video is customized and created as a QR Code	
2.		Additional practice questions	
3.		Addition of materials and images	

NO	Before Revision	Suggestion	After Revision
4.		Addition of direct practice questions with plants	
5.		Use a font style that is easy for students to read.	
6.		Foreign terms are in italics	

Discussion

A. Validation of Big Book Media Based on Augmented Reality Material on Structure and Function of Plant Parts

Big book material based on augmented reality material on the structure and function of plant parts that have been completed, then validated to determine validity. This validation is carried out on media, material, and language experts. Validation to media experts was carried out on Friday, June 7, 2024. This validation was carried out directly by meeting the lecturer as a media expert. The results of the validation to media experts on the augmented reality-based big book media on the structure and function of plant parts material had a final value of93.18%. Based on the guidelines for converting quantitative to qualitative data, the validation of the augmented reality-based big book media on the structure and function of plant parts falls into the very feasible/very good criteria.

There are several suggestions given by media experts regarding augmented reality-based big book media, including the learning videos in the big book being adjusted and made into CR Code and the addition of practice questions in the big book. Overall, media experts concluded that the augmented reality-based big book media on the structure and function of plant parts is worthy of being tested according to the suggestions that have been given.

After validation to media experts, the next step is validation to material experts. On Friday, June 7, 2024, validation was carried out to material experts. Validation was carried out directly by meeting lecturers as material experts. The results of validation to material experts on big book media based on augmented reality on the structure and function of plant parts material had a final value of85%. Based on the guidelines for converting quantitative to qualitative data, the validation of the augmented reality-based big book media on the structure and function of plant parts falls into the very feasible/very good criteria.

There are several suggestions given by material experts regarding augmented reality-based big book media, including making the material more and more complete, adding more images according to the material, adding direct practice questions with plants. Overall, material experts concluded that augmented reality-based big book media on the structure and function of plant parts is worthy of being tested according to the suggestions that have been given.

After validation to media experts and material experts, the next validation is to linguists. On Tuesday, June 11, 2024, validation was carried out to linguists. Validation was carried out directly by meeting the lecturer as a linguist. The results of validation to linguists on the big book media based on augmented reality on the structure and function of plant parts material had a final value of86.36%.Based on the guidelines for converting quantitative to qualitative data, the validation of the augmented reality-based big book media on the structure and function of plant parts falls into the very feasible/very good criteria.

There are several suggestions given by language experts on big book media based on augmented reality, including using a font model that is easy for students to read, foreign terms are printed in italics. Overall, language experts concluded that big book media based on augmented reality material on the structure and function of plant parts is worthy of being tested according to the suggestions that have been given.Based on the explanation above, it can be seen that the validity of the big book media based on augmented reality on the material on the structure and function of plant parts obtained a total percentage = $\frac{93.18\%+85\%+86.36\%}{3}$ = 88.18% so it is concluded that the big book media based on augmented reality material on the structure and function of plant parts has very good/very feasible validity.

B. The Feasibility of Big Book Media Based on Augmented Reality Material on the Structure and Function of Plant Parts

The augmented reality-based big book media that has been completed and validated is then assessed for its feasibility with a teacher response questionnaire

on the augmented reality-based big book media on the structure and function of plant parts. On Monday, June 10, 2024, this teacher response questionnaire was given. The feasibility assessment by the teacher was carried out directly by meeting the teacher as a practitioner. The results of the teacher's feasibility assessment of the augmented reality-based big book media on the structure and function of plant parts have a final value of 100%.Based on the guidelines for converting quantitative to qualitative data, the validation of the augmented reality-based big book media on the structure and function of plant parts falls into the very feasible/very good criteria.

There are several suggestions given by the teacher regarding the augmented reality-based big book media, including adding one or two questions in the form of descriptions to the practice questions. Overall, the teacher concluded that the augmented reality-based big book media for the structure and function of plant parts is worthy of being tested according to the suggestions that have been given.

C. The Attraction of Big Book Media Based on Augmented Reality Material on Structure and Function of Plant Parts

Big book media based on augmented reality material on the structure and function of plant parts when implemented in learning, students are more interested in the media so that students are more active and do not feel bored during learning.This is in accordance with the questionnaire that the researcher distributed to 27 fourth grade students of SDN Tlogo 02. The researcher gave the questionnaire to students on Wednesday, June 12, 2024. In accordance with the results of the interestingness questionnaire that the researcher gave to fourth grade students of SDN Tlogo 02 after implementing augmented reality-based big book media on the material on the structure and function of plant parts, the final score was 93.15%.

Based on the guidelines for converting quantitative to qualitative data, the validation of big book media based on augmented reality on the material of structure and function of plant parts falls into the criteria of very feasible/very good. Based on the explanation above, it can be concluded that the development of big book media based on augmented reality on the material of structure and function of plant parts can attract students' attention.

4. Conclusion

Based on the description above, it can be seen that the big book media based on augmented reality on the material of the structure and function of plant parts received a good assessment so that the media is included in the very valid category. In addition, the big book media based on augmented reality on the material of the structure and function of plant parts is a media that is suitable for use in classroom learning activities. Students are also very interested in the use of big book media based on augmented reality on the material of the structure and function of plant parts developed by researchers. This can be seen from the enthusiasm of students and the results of the interestingness questionnaire filled out by students. Based on these results, it can be concluded that the big book

media based on augmented reality on the material of the structure and function of plant parts is a media that can be used by teachers in classroom learning activities as a means given to students to make it easier to understand the material given by the teacher.

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