Development of Augmented Reality-Based Teaching Module on Material of Understanding Human Respiratory Organs Class V Elementary School

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ABSTRACT

This research was motivated by the problem of students who had difficulty understanding abstract material, one of which was getting to know the human respiratory organs. Augmented Reality-based media is one of the interactive media that is effectively used as a medium for introducing natural science materials in order to stimulate children's imagination, so that it will motivate students to learn. The aim of this development is to produce a product in the form of an open module that is valid and practical. The research method used is Research and Development (R&D) with the ADDIE research model which includes 5 stages, namely, Analysis, Design, Development, Implementation, and Evaluation. The product developed in this research is an open module based on augmented reality which is then tested for validity by material experts, media experts and language experts, as well as individual tests of 3 students and small group tests of 8 people using a student response questionnaire. class V at SD Negeri 7 Muara Telang.

The average validity level set at 92.66% indicates a very valid category. The practicality analysis procedure was evaluated by conducting individual tests on 3 students at the initial stage, followed by small group tests involving 8 students. The test results provide an average score of 92.08%, which displays a very practical percentage. Therefore, it can be concluded that the augmented reality teaching module which focuses on teaching fifth grade students about the introduction of human respiratory organs is very valid and practical, thus the teaching module is suitable for use in learning.

Keywords: Teaching Module; *Augmented Reality*; IPAS

ABSTRAK

Penelitian ini dilatar belakangi oleh adanya permasalahan peserta didik yang sulit memahami materi yang bersifat abstrak, salah satunya ialah mengenal organ pernapasan manusia. Media berbasis Augmented Reality menjadi salah satu media interaktif yang efektif dipergunakan sebagai media untuk mengenalkan materi-materi ilmu pengetahuan alam agar dapat merangsang imajinasi anak, sehingga nantinya akan memotivasi peserta didik untuk belajar. Tujuan pada pengembangan ini ialah untuk menghasilkan produk berupa modul ajar yang valid dan praktis. Metode penelitian yang diguanakan ialah Research and Development (R&D) dengan model penelitian ADDIE yang meliputi

5 tahapan yakni, Analysis, Design, Development, Implementation, dan Evaluation. Produk yang dikembangkan dalam penelitian ini ialah suatu modul ajar berbasis augmented reality yang kemudian diuji kevalidan oleh ahli materi, ahli media, dan ahli bahasa, serta uji perorangan berjumlah 3 orang peserta didik dan uji kelompok kecil yang berjumlah 8 orang dengan menggunakan angket respon peserta didik kelas V di SD Negeri 7 Muara Telang.
Rata-rata tingkat validitas yang ditetapkan sebesar 92,66% menunjukkan kategori sangat valid. Prosedur analisis kepraktisan dievaluasi dengan melakukan tes individual terhadap 3 siswa pada tahap awal, dilanjutkan dengan uji kelompok kecil yang melibatkan 8 siswa. Hasil pengujian memberikan hasil skor rata-rata sebesar 92,08% yang menampilkan persentase sangat praktis.
Maka dari itu, bisa dilakukan pengambilan kesimpulan yakni modul ajar augmented reality yang berfokus pada pengajaran siswa kelas V tentang pengenalan alat pernafasan manusia sangat valid serta praktis dengan demikian modul ajar layak digunakan dalam pembelajaran.
Kata Kunci: Modul Ajar; *Augmented Reality*; IPAS

INTRODUCTION

In the current era of globalization, humans need to coexist with Science and Technology, generally abbreviated to science and technology. The development of science and technology has directly and indirectly had a lot of influence on the world, especially education. Technological developments have influenced life unavoidably, because science and technology provides many roles and helps in work. Science and technology has developed greatly in various sectors, one of which is in the world of education. With the development of technology, it can facilitate the learning process. According to Khumairoh in the journal (L. Santi et al., 2023) said that a nation that can be said to be advanced lies in the quality of its education.

Education at the elementary school (SD) level is a very crucial factor, because elementary school education is the foundation for a child's future academic success and is the place where a child's potential is first realized, education is a very crucial stage of education. Elementary students are more responsive and adept at retaining information. Improving the quality of human resources, especially teachers, is one of the efforts to raise the level of education (Haryani et al., 2022). Meanwhile (Hidayat & Abdillah, 2019) defines education as a deliberate and systematic effort that aims to facilitate the development of students' physical and spiritual potential through the guidance and teaching of professional teaching staff. According to Ahmad D. Marimba, education is the deliberate provision of guidance or leadership by teachers or educators to encourage the physical and spiritual growth of the individuals being educated, with the aim of forming their fundamental character (Rahman et al., 2022). According to (Riski et al., 2023) education is a stage that aims to influence students so they can adapt effectively to their environment. Based on the description above, it can be concluded that education is a purposeful effort that includes the acquisition of knowledge and the use of learning methods so that students can achieve their highest abilities (Kurino & Herman, 2023b).

In education, there is a learning process and the learning processes cannot be separated from each other. The learning process is explained according to in the journal (Alfina et al., 2023) explaining the stages of learning, namely one of the actions or activities involving teachers and students is the learning process, which means that students are responsible for learning while educators are responsible for learning. responsible for organizing the teaching process, with a focus on students. According to Gagne Berlinger, learning is the stage where an organism modifies its behavior in response to experience (Johari, 2018). According to

Hasmiati explained in the journal (Madu et al., 2024) Merdeka Belajar is an educational program that emphasizes content mastery and the diversity of students' competencies, so they are required to be active and creative. This shows that students are not considered as the goal of learning, but rather as the main actors because they are considered to have their own learning abilities. Therefore, the teacher functions as a learning resource, guide and director.

At this time there is a change in the elementary school curriculum, where education in Indonesia is implementing an independent curriculum. In the independent curriculum, preparation is implemented starting from the first year, namely first and fourth grades, in the second year, second and fifth grades, then in the third year, namely third and sixth grades (Sugih et al., 2023). The Ministry of Education and Culture in the journal (Rahmawati et al., 2023) explains that the implementation of the independent curriculum is a recovery curriculum due to the Covid-19 pandemic. In the education sector, the use of digital technology has become standard practice, especially considering the widespread Covid-19 outbreak. This is due to the impact of technology on the field of education. Moreover, almost every student has a laptop or smartphone. Learning methods during the Covid-19 pandemic show related issues. Digital teaching resources are one way technology can be used to improve learning levels (L. Santi et al., 2023). According to journal (Efendi et al., 2023) by implementing an independent curriculum, teachers have the flexibility to choose educational resources that suit students' interests and learning needs when adopting an independent curriculum. It is recommended that teachers conduct an initial assessment to determine their students' needs and adapt learning resources to meet those needs by considering the students' individual talents, interests and abilities.

With the current development of science and technology, it is one of the factors that drives the development of media or teaching materials needed to maximize the learning process. Information produced or utilized in learning theory can be communicated through learning media. can be utilized to channel messages and pique students' interests in thought, feeling, and experience in order to inspire a purposeful, guided, and controlled learning process (Widyaningrum et al., 2022). According to (Setyawan, 2019) through educational technology it is also possible to change the focus of learning from the initial presentation of knowledge on the one hand to a process oriented towards knowledge discovery involving students. This is also possible due to advances in educational technology (Kurino & Herman, 2023a). Currently, most educators do not prepare adequate teaching and learning resources, so that the delivery of information is less than optimal and not systematic according to journals (Hikmah et al., 2022).

According to Magdalena in the journal (Oktaviana et al., 2023) teaching materials is a collection of resources or learning aids known as teaching materials includes methods, constraints, and assessment techniques along with organized, engaging content to provide the complicated techniques needed. An example of a technology-based educational tool is a teaching module that utilizes Augmented Reality. Augmented Reality technology involves the integration of the virtual world and the real world to obtain information from the system about the real thing being viewed. This creates a perfect blend of the two worlds. According to journal (Rofi'i et al., 2023) technology known as augmented reality (AR) enhances the user experience by combining digital aspects with the physical world. The use of augmented reality (AR) in the classroom can increase student enthusiasm and engagement while helping the

development of various literacy skills. One may argue that the majority of scientific classes that use AR technology include topics like chemical reactions, the universe, human anatomy, and plant anatomy (Karacan & Akoğlu, 2021). According to (Fitria, 2023) AR can be used to create learning material that is not possible directly, such as observing an object in three dimensions. We can observe something without actually doing it by using a cellphone or laptop.

In the research the title is "Development. "Augmented Reality (AR) Based Teaching Materials for Students' Science Subjects at MIN 1 North Kolaka" Overall, the application of AR-based teaching materials can be declared suitable for use in the science learning process. Then in the journal "Development of Augmented Reality Book as an Android-Based Virus Learning Media" with an average percentage of assessments of 98.67%, an average percentage of media expert assessments of 89.23%, and an average percentage of student responses, namely 83.50% which is classified as very good. In the next research (L. N. Santi et al., 2022) entitled "Development of *Augmented Reality* (AR) Based Textbooks Using Assemblr Apps Theme 9 "Exploring Outer Space" for Elementary School Class VI" Based on the evaluation of the five validators, the results of the validity test of making textbooks based on AR (Augmented Reality) using Assemblr Apps obtained an average validity score of 91.72% and was included in the "very valid category". The percentage of students who got a score higher than the KKM or ≥75 determines the results of the textbook effectiveness test. At SDN 1 Grajagan, has a completion percentage of 80% with a very effective effectiveness category showing the results that the use of AR-based textbooks using Assemblr Apps is effective in the learning process in class VI elementary school.

Based on the results of interviews held with class V teachers at SD Negeri 7 Muara Telang on January 29 2024, the science and science learning implementation used the Independent Curriculum Package Book. The media used in science and science learning uses electronic media such as LCD projectors. This media has shortcomings in its use, such as preparing this media so that it can be used requires quite a long time, then students tend to be interested in the images and sounds displayed, rather than focusing on material explained by the teacher. Apart from that, operating this LCD projector media requires teachers to have knowledge and competence, as well as skills in designing learning materials, so that learning can be effective. In addition, it was found that students' grades in science and science subjects were below the minimum passing threshold. This gap can be caused by variations in students' understanding of abstract concepts, inadequate learning styles, and a lack of alternative media used during the learning process. In addition, teachers have not created teaching materials, such as modules, for learning purposes. According to research conducted by (Lestari et al., 2023), science and science learning includes science and social studies subjects. Based on (Suhelayanti et al., 2023) science is a scientific discipline which is part of its own curriculum. Due to recent technological advances, the use of Augmented Reality (AR) has emerged as a viable option for educational purposes (Putra et al., 2020).

As stated by (Evitasari, 2019) modules have various benefits: 1) Students can effectively achieve learning goals at a pace that is in line with their abilities and learning speed. 2) Students are encouraged to be self-motivated and actively involved in the learning process, because they are responsible for acquiring knowledge and exploring concepts independently. 3) Modules can be arranged in such a way as to suit student competencies. 4) The questions or assessment

items in the module can function as a means of measuring student progress in achieving learning targets. 5) This module is versatile and can be used in various situations and circumstances. Haryani, in research conducted (Meilani et al., 2024) explained that elementary school students show a higher level of intelligence and responsiveness in processing information. Technology can function as a tool as well as a learning medium, as stated in the journal (Dahlia et al., 2023).

METHODS

Type and Design

This research uses a form of research and development known as R&D (Research and Development). As stated by (Sugiyono, 2023) development research is a systematic scientific stage that involves investigation, creation, manufacture and assessment of the authenticity of the goods produced.   In the article (Maydiantoro, 2019) states that R&D is a research approach used to create and evaluate products that will be further developed in the education sector.

This research uses the ADDIE approach, which includes five different stages: Analysis, Design, Development, Implementation and Evaluation (Haryani et al., 2022). Mulyatingsih, in a (Yuniastuti et al., 2021) stated that the ADDIE research and development model is seen as a more logical and comprehensive approach in the product development process, ADDIE stage include Analysis, Design, Development, Implementation, and Evaluation.

Data and Data Sources

This research develops a teaching module using augmented reality technology to teach fifth grade elementary school students about parts of human respiration. This research was conducted at SD Negeri 7 located in Kec. Muara Telang District. Banyuasin. Various data collection tools used in this research were interviews, expert validation sheets, and student response questionnaires to measure the level of practicality of the teaching module.
1. Interviews were conducted to obtain information needed in developing teaching modules, interviews were conducted with fifth grade elementary school teachers to look for problems in the science and science learning process.
2. Validation sheets are given to 3 experts, namely material experts, media experts and language experts to assess the validity of the product being developed, then the module is improved according to comments and suggestions from the experts, so that the module can be used at the next stage.
3. Student response questionnaire which includes 2 stages, namely the individual test stage with a total of 3 students, then the small group test stage with a total of 8 students, this stage is to test the practicality of the teaching module that has been created.

Data Collection Technique

Data collection procedures refer to the systematic approach used by researchers to collect the data needed to solve research challenges (Abubakar, 2021). The data collection methods used in this research include the use of questionnaires, interviews and documentation. In his published work (Sahir, 2022) defines a questionnaire as a set of instruments consisting of questions designed based on measuring instruments for research variables. The use of questionnaires for data collection is very efficient, because respondents are only asked to

choose the answers given by the researcher. This research questionnaire was used for expert validation and carrying out product trials on children in the school environment. The researchers used a Likert scale in their research. An interview is a structured interaction between two individuals aimed at exchanging information and ideas by asking questions and providing answers. Interviews were conducted to seek information related to the development of augmented reality-based teaching modules. Interviews were conducted with fifth grade elementary school teachers. The information required was in the form of problems that occurred in the science and science learning process, student characteristics, materials and curriculum used in learning. Then the questionnaire in the form of student responses, consists of 2 stages, the first stage is 3 students, and the second stage uses 8 students to measure the level of practicality of the module being developed.

Data Analysis

Data analysis techniques are carried out to present teaching modules based on Augmented Reality in accordance with the criteria of validity and practicality. After obtaining the data, the data is then managed. In this research, the analysis techniques used are validity analysis and practicality analysis. The existing validation achievements on the module validation sheet will be analyzed using the following formula:

$$p = \frac{F}{N} \text{x } 100$$

Information:
P: Percentage figure for questionnaire data
F: Total score obtained
N: Maximum number of scores
The following are the eligibility criteria for expert validation based on journals (Lubis et al., 2021)

Table 1. Validity Criteria

Evaluation	Interpretation Criteria
81%≤ P < 100%	Very Valid
61% ≤ P < 81%	Valid
41% ≤ P < 61%	Enough
21% ≤ P < 41%	Invalid
0% ≤ P < 21%	very Invalid

The validation sheets of material experts, media experts and language experts are then calculated and analyzed to obtain validity criteria based on the table above. Then, in the student response questionnaire in this research, a Likert scale was used to determine the practicality of Augmented Reality-based teaching modules in learning using a Likert scale of 1-5.

Table 2. Criteria for Student Questionnaire Answers

Answers Criteria	Score for Positive Answers	Score for Negative Answers
SS = Strongly agree	5	1
S = Agree	4	2
RR = Undecided	3	3
KS = Disagree	2	4
TS = Disagree	1	5

Product practicality analysis based on questionnaire responses from students and educators is calculated using the following formula:

$$N = \frac{\sum a}{\sum b} \times 100$$

Information:

N: value

∑a: Total Score Obtained

∑b: Max score

The following are the criteria for the percentage of product practicality according to the journal (Nesri & Kristanto, 2020) as follows:

Table 3. Product Practicality Percentage Criteria

No.	Practicality Criteria	Practicality Level
1.	$80\% < P \leq 100\%$	Very Practical
2.	$60\% < P \leq 80\%$	Practical
3.	$40\% < P \leq 60\%$	Less Practical
4.	$20\% < P \leq 40\%$	Impractical
5.	$0 < P \leq 20\%$	Very Impractical

The student response questionnaire includes 2 stages, namely individual testing with a total of 3 students, and small group testing with a total of 8 students. The data obtained is then processed and analyzed based on the answers from the students according to table 2 the answer score is strongly agree is 5, agree is 4, undecided is 3, disagree is 2, and strongly disagree is 1.

RESULTS AND DISCUSSION

This research involves developing teaching modules using Augmented Reality technology. The research follows the ADDIE model. The analysis stage focuses on problem identification, while the design stage includes creating a product design. Development involves the actual creation of the product, and implementation includes testing the product during development. Finally, the evaluation stage aims to assess product performance and make improvements if necessary.

Analyze

Analysis is related to examining the work setting and surrounding environment to determine the product to be produced (Sugiyono, 2017). At this stage, the instructor carries out an analysis of the needs, curriculum and characteristics of students. Based on interviews with fifth grade teachers, it was found that they relied on independent curriculum package books to guide their teaching in learning science and science. Sometimes, they use projectors, but operating them effectively requires special skills and knowledge. Teachers also try to organize material in such a way that it can convey learning objectives effectively. However, teachers have not developed teaching modules. Curriculum analysis involves examining the curriculum, particularly the self-contained curriculum, to assess how aligned the material is with the learning objectives (ATP) and learning progress.

Analysis of student needs, obtained from interviews with fifth grade teachers, shows that certain students' scores in science subjects are still below the minimum competency level. The teacher explains that students have difficulty learning abstract material. Students need additional teaching resources that can enhance the learning process. This module allows students to engage independently with the topic, without relying on teacher assistance. Analysis of student characteristics is an important step for researchers to ascertain student characteristics which are the basis for the ongoing development of teaching modules. It is hoped that teaching modules that are tailored to the characteristics of each student can facilitate student learning. With the advantages of teaching modules compared to other teaching materials, it is hoped that differences in student characteristics such as differences in learning styles and different cognitive abilities or understanding of material can be a solution in learning sciences.

Design

At the design stage, researchers create or assemble educational modules that will be developed. The aim of this design stage is to create a module prototype. Augmented Reality-based learning modules are designed with several components including a cover, foreword, table of contents, concept map, instructions for using the module, learning objectives, learning activities, practice questions, glossary, answer key, bibliography, and author biography. The teaching module design was created using the Canva application and the Assemblr Edu application to produce 3D objects in the teaching module. The cover design is seen in the following image.
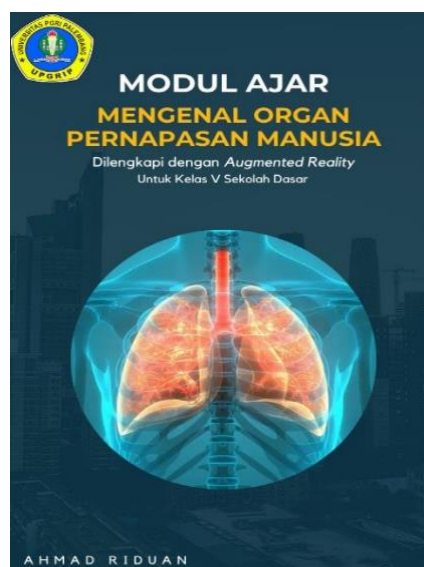
Figure 1. View of the Teaching Module Cover

After the researcher designs the appearance of the module, the next step is to design the content or material of the Augmented Reality-based teaching module. At this stage the researcher develops learning objectives. The researcher designed the content of the material by being guided by the Class V Science and Science course textbook on the subject of getting to know the human respiratory organs. In understanding human respiratory organ material, students can see 3D or three-dimensional images/objects with a scan marker in the Assemblr Edu application. According to (Febriningrum & Purwaningsih, 2022) explains that Assemblr Edu is an application service for learning that can be accessed via smartphone which is provided free of charge and paid which can be downloaded on smartphones. The design of the module contents can be seen in the following image.

Figure 2. Augmented Reality Based Module Content Design

Development

At this stage, researchers designed an Augmented Reality-based teaching module using the Canva and Assemblr Edu applications to create markers or QR Codes for 3D objects. The following are the steps for creating an Augmented Reality-based teaching module: 1) Open the Assemblr Edu application on the smartphone that has been downloaded. 2) Login or register on the Assemblr Edu application first. 3) When you have entered the application, click on the 3D/AR Editor option, then click the settings icon to change the Indonesian language, click on the + icon to create a 3D object. 4) Then enter the new view, click the + logo to add an object, then click on the 3D option, a selection of 3D objects will appear that we can use for free or for a fee. 5) In the search field, enter the object you want to use, because in developing the module entitled getting to know human respiratory organs, the author is looking for examples of human respiratory organs. Then a selection of 3D objects regarding human organs will appear. 6) Then the 3D object will appear, after that we can add text to the object, by clicking on the + icon then selecting text. if the project is complete, then click on the publish section, then click on share QR marker, then download the marker you created earlier.

The following is an image of the Assemblr Edu 3D marker.

Figure 3. Marker 3D Assemblr Edu

After being developed, the product in the form of an Augmented Reality-based teaching module was then tested by three experts, namely material experts and media experts, as well as one language expert who is the teacher of class V at an elementary school. The following are the results of validation analysis from 3 validators.

Table 4. Validation Analysis Results

Expert	Expert Average
Material Expert	93,33%
Media Expert	94,67%
Linguist	90%
Total	278
Percentage (%)	92,66%

In table 3, it can be seen that the validation achievements of material experts, media experts and language experts who have carried out validation by validators have an average of 92.66%. Based on the validity score interpretation criteria, a conclusion can be drawn, namely that the Augmented Reality-based teaching module for Class V Science and Technology learning received a score of 92.66% in the very valid category and can be used for the learning process..

Implementation

One to One

The individual test was carried out in class V of SD Negeri 7 Muara Telang. Prototype II was carried out individually (one to one) to determine students' responses to prototype II. Researchers conducted trials on 3 students. Students provide responses using a response questionnaire. The achievements of the questionnaire that have been given by students can be observed in table 4 as follows.

Table 5. Results of Student Response Questionnaires at the One to One Stage

No.	Name	Score Question										Total	Persentage (%)
		1	2	3	4	5	6	7	8	9	10		

1.	NA	5	4	4	4	5	5	5	4	4	5	45	90%
2.	NKN	4	4	5	5	5	5	4	5	5	5	47	94%
3.	ADL	5	4	5	4	4	4	5	5	4	4	44	88%
	Total											136	272%
	Overall Average											90,66%	
	Category											Very Practical	

Based on the results of the questionnaire, students' responses at the individual trial stage (one to one) obtained a questionnaire achievement of 90.66%. The Augmented Reality-based teaching module on the material about recognizing human respiratory organs in class V is very practical and can be used for learning.

Small Group

At the small group testing stage, 8 students filled out a response questionnaire to find out the practicality of the teaching module based on Augmented Reality. The results of the small group test can be observed in the following table.

Table 6. Student Response Questionnaire (small group)

No.	Name	Score Question										Total	Persentage (%)
		1	2	3	4	5	6	7	8	9	10		
1.	OV	5	5	4	4	5	4	5	4	4	4	44	88%
2.	LSZ	5	5	5	4	5	5	4	5	5	5	48	96%
3.	RAR	5	5	5	4	4	4	5	5	5	5	47	94%
4	KF	5	5	5	5	5	4	4	5	5	5	48	96%
5	RA	4	5	4	4	5	5	3	4	5	5	45	90%
6	AF	5	5	5	3	5	5	5	5	4	5	47	94%
7	BGS	5	5	5	5	4	4	5	3	5	5	46	92%
8	GA	5	5	5	4	5	5	5	5	5	5	49	98%
	Total											374	748%
	Overall Average											**93,5%**	
	Category											**Very Practical**	

After completing the questionnaire by 8 students, the final result of developing an Augmented Reality-based teaching module was obtained with a score of 93.5% which was declared very practical.

Table 7. Student Practicality Test Results

Result	Value	Category

One to One	90,66%	Very Practical
Small Group	93,5%	Very Practical
Total	184,16%	
Average	**92,08**%	**Very Practical**

In the table above, the individual test results obtained were 90.66% in the very practical category, then in the small group test the percentage was obtained at 93.5% with a total of 184.16%, then the average of the individual test results and small group tests was 92. .08% in the very practical category.

Evaluation

At this stage an assessment is carried out, starting from the product design stage and continuing through to implementation. The aim is to review feedback provided by previous experts and identify the strengths and weaknesses of teaching modules that underwent previous development. After carrying out a number of revision rounds based on the validator's suggestions, and completing the validation questionnaire sheet and student response questionnaire sheet, the researcher continued analyzing the data to assess the validity and practicality of the teaching module that utilizes Augmented Reality (Kurino & Herman, 2023b). After carrying out three separate expert assessments and small group tests, the teaching module was declared valid and practical. This is in line with research (Dianti et al., 2022) which states that based on the assessment of material experts, the percentage was 97.67% with very valid criteria.

Validity

Based on data from the validation results of the augmented reality-based teaching module on the material about recognizing human respiratory organs for class V elementary school by material experts, it was declared valid. In the material expert assessment, the average percentage score was 93.33% in the very valid category. Based on data from the validation results of the augmented reality-based teaching module by media experts, it was declared valid and can be tested in learning. In the media expert assessment, the average percentage score was 94.67% in the very valid category. Based on data from the validation results of the augmented reality-based teaching module by language experts, it is declared valid and can be tested to assess its validity in the learning process. In the language expert assessment, the average percentage score was 90% with a very valid category.

Practicality

Next, a practicality test was carried out on Augmented Reality-based teaching modules on the material about recognizing human respiratory organs for class V of SD Negeri 7 Muara Telang by analyzing the results of individual test questionnaires (one to one) and small group practicality tests with the results of practicality tests from participants. students got a score of 92.08% in the very practical category.

CONCLUSION

The results of making a teaching module using Augmented Reality technology for learning for fifth grade students at SD Negeri 7 Muara Telang about getting to know the human respiratory system is classified as very valid. This is supported by the percentage obtained from checking the average validity value collected from validators via validation sheets, namely 92.66% and classified as very valid. Augmented Reality-based teaching modules are classified as practical based on the results of one-to-one tests and small group assessments. The teaching module obtained an average score of 92.08% in individual and small group assessments, which shows that it is very practical and suitable for use at the learning stage. The researcher hopes that this research will be useful for future researchers with different material.

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