Increasing Fifth Grade Students' Learning Motivation Through Learning Modules Containing Augmented Reality

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ARTICLE INFO

ABSTRAK

Penggunaan teknologi dalam kegiatan pembelajaran di lapangan yang masih minim, belum sesuai dengan perkembangan zaman yang mulai mengutamakan konsep hidup secara digital dengan penggunaan aplikasi pendidikan yang mobile dan responsif. Penelitian ini bertujuan untuk menciptakan modul pembelajaran bermuatan augmented reality pada topik sistem pernapasan manusia dan hewan untuk meningkatkan motivasi belajar siswa kelas V sekolah dasar. Penelitian ini termasuk jenis penelitian pengembangan dengan menggunakan model pengembangan ADDIE. Metode pengumpulan data yang digunakan adalah metode kuesioner dengan instrumen rating scale. Metode analisis data yang digunakan yaitu analisis deskriptif kualitatif kuantitatif dan statistik inferensial. Hasil penelitian ini menunjukkan bahwa modul yang dikembangkan valid dengan skor 0,95 memeroleh indeks istimewa, praktis dengan skor rata-rata 66,07 termasuk kategori sangat praktis, serta efektif digunakan untuk meningkatkan motivasi belajar siswa kelas V sekolah dasar dengan perolehan t_{hitung} 3,278 lebih dari t_{tabel} 1,729 dengan kemurnian efektivitas sebesar 0,733 tergolong sedang. Modul pembelajaran bermuatan augmented reality memberikan kemudahan siswa dalam memahami informasi secara mandiri serta dapat meningkatkan motivasi belajar siswa kelas V sekolah dasar. Implikasi penelitian ini modul pembelajaran dapat membantu siswa untuk belajar secara mandiri serta dapat meningkatkan motivasi belajar siswa, sehingga dapat mencapai tujuan pembelajaran dengan baik.

ABSTRACT

The use of technology in learning activities in the field still needs to be improved. It must align with current developments prioritizing digital living using mobile and responsive educational applications. This research aims to create a learning module containing augmented reality on the human and animal respiratory systems to increase the learning motivation of fifth-grade elementary school students. This research is a type of development research using the ADDIE development model. The data collection method was a questionnaire with a rating scale instrument. The data analysis methods used are descriptive qualitative, quantitative, and inferential statistics. The results of this research show that the module developed is valid with a score of 0.95, obtaining a special index, practical with an average score of 66.07, including the very practical category, and is effectively used to increase the learning motivation of fifth-grade elementary school students with at count of more than 3,278. From the table, 1.729 with a purity of effectiveness 0.733 is classified as moderate. The learning module containing augmented reality makes it easier for students to understand information independently and can increase the learning motivation of fifth-grade elementary school students. This research implies that learning modules can help students learn independently and increase learning motivation to achieve learning goals well.

1. INTRODUCTION

Life is increasingly dynamic, as if there are no limits, shown by the development of technology which is growing rapidly to the point where it plays a full role in everyday life (Daud, 2021; Sawitri et al., 2019). The rapid pace of development of science and technology (IPTEK) has influenced all aspects of human life, from social, economic, cultural, to educational aspects. In this era of revolution 4.0, if you are

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even a little behind, then education cannot keep up with the dynamic developments of the times and is always undergoing renewal (Daud, 2021; Wannesia et al., 2022). Education as one way that can be done to improve the quality of human resources requires serious attention. In this way, education must not be left behind by developments in science and technology, in order to create the nation's next generation who are superior, creative, independent, and able to navigate the strong currents of development in the current era of revolution 4.0 (Novalia & Noer, 2019). Apart from that, the aim of the industrial revolution 4.0 era or what is also called the digital revolution is to create a society that will be able to solve various social challenges, by integrating revolution 4.0 innovations such as: IoT, Big Data, Artificial Intelligence (AI), robots, and so on. into various areas of life. This is due to predictions regarding future technological conditions, which prioritize the concept of digital living (disruption) which is called the super smart society 5.0 era (Nugraha, 2022).

One of the impacts of the wave of disruption in education is the existence of educational applications that are mobile and responsive (Nugraha, 2022). Referring to the impact of the wave of disruption and the function of educational innovation, it is natural to develop various teaching materials and learning media based on digital technology. The use of technology can now be applied in the learning process, because most schools have facilitated various tools that support the use of technology in the learning process, such as providing facilities in the form of laptops, projectors, and at times even allowing students to bring their smartphones to use. support the learning process at school. In order to provide various digital learning facilities, each individual, including educators, is required to be able to utilize the sophistication of available technology, so that they can integrate technology into a series of interesting and innovative learning processes, considering that today's children are more interested in digital media that they rarely use (Fahyuni, 2017).

However, the facts on the ground show something different. Even though facilities have been provided that can support digital learning, their use still tends to be less than optimal. This is supported by the results of a preliminary study conducted on 5 fifth grade teachers in several elementary schools. Based on the results of a preliminary study that was carried out, it was found that only 20% of teachers utilized digital media in the form of audio video in the face-to-face learning process after the Covid-19 pandemic. In fact, since the implementation of ANBK (Computer Based National Assessment), every school, especially for class V students, has been provided with adequate digital learning facilities such as laptops, projectors and internet networks (Wifi). Meanwhile, 80% of other teachers most often only use teacher books, student books, and student worksheets. Apart from that, the results of distributing questionnaires also showed that the student books used in the learning process were considered to be complete, however as many as 100% of teachers stated that the material in the student books used was still considered to be insufficiently in-depth. Based on the results of questions and answers with 20 class V students at SD No. 2 Carangsari, it was also found that students preferred learning to be carried out using electronic/digital media. Students feel bored if learning only involves reading student books or just listening to the teacher's explanation. Some students also stated that they often felt sleepy when asked to take notes on material in the student book. It's different if learning is also varied by watching videos or looking for the material themselves on the internet, students feel more enthusiastic, especially since they rarely use the media or have never seen it.

The solution to overcome this problem, it is necessary to develop digital-based teaching materials that can support the learning process, so that it can motivate students to learn because learning becomes more interesting, and is able to support students to be able to learn independently. Modules are teaching materials that are systematically arranged in language that is easy for students to understand according to their age and level of knowledge, thus enabling students to learn independently or with minimal guidance from educators (Handayani & Prasetyo, 2022). Learning modules can be used as a practical alternative teaching material by presenting material that is more complete and relevant to real life. One interesting digital technology that can be combined with learning modules is augmented reality. Augmented reality is a technology that can display virtual objects in a real environment and in real time with the help of technological media such as smartphones, tablets, laptops or PCs (Andriyani & Buliali, 2021; Nirwanto et al., 2021). Augmented reality is used to visualize three-dimensional objects in the hope of helping students understand each element of the object from various directions or sides (Degner et al., 2022; Dinayusadewi & Agustika, 2020). Apart from that, the use of augmented reality can make students more interested in learning independently. This is because augmented reality has several advantages including allowing high interactivity, thus allowing users to interact with the media, being interesting and increasing students' enthusiasm for learning because it displays objects as if they were in a real environment which makes students more motivated to learn; and does not require complicated coding techniques in producing augmented reality applications (Dinayusadewi & Agustika, 2020; Fidan & Tuncel, 2019; Nirwanto et al., 2021).

Previous research findings stated that the learning module showed positive results (Rahmatullah et al., 2021). The thematic learning modules based on local wisdom that have been developed are suitable for use in the learning process (Mufaridah et al., 2020). Using augmented reality as an effective, interesting and fun learning medium (Cai et al., 2020; Ratna Ningsih, 2020). The use of AR-based e-magazines can increase students' interest in learning (Zulfarina et al., 2021). Based on previous research, it was found that the use of augmented reality technology as a medium to support the learning process can improve students' learning outcomes, interest and learning motivation. Based on these two studies, the learning module is considered suitable and effective for use as an alternative additional teaching material that can improve students' learning abilities, motivation and learning independence. Apart from that, if the learning module is presented by integrating digital-based technology in it, it can increase the attractiveness of using the module. The aim of the research is to create a learning module containing augmented reality on the topic of the human and animal respiratory system to increase the learning motivation of Class V elementary school students.

2. METHOD

This research is research into the development of learning modules containing augmented reality on the topic of the human respiratory system in class V elementary schools. The development model design used to develop learning modules containing augmented reality is the ADDIE development model which consists of four stages, namely the analysis, design, development, implementation and evaluation stages (Krismony et al., 2020). The analyze stage is carried out through the needs analysis stage, student characteristics analysis, curriculum analysis, and learning resource analysis. The design stage is carried out by creating a design and determining the elements needed to develop the module. The development stage is carried out by realizing the product design that has been determined into a product that is feasible and practical to use. At this stage, product trials are also carried out in terms of product validity and practicality. The implementation stage is carried out by implementing the product to determine the effectiveness of the module in increasing student learning motivation. The evaluation stage is carried out by reviewing the overall module test results, as well as making final revisions based on the input and suggestions obtained, thereby producing a better learning module. The development research design using the ADDIE model is presented in Figure 1.
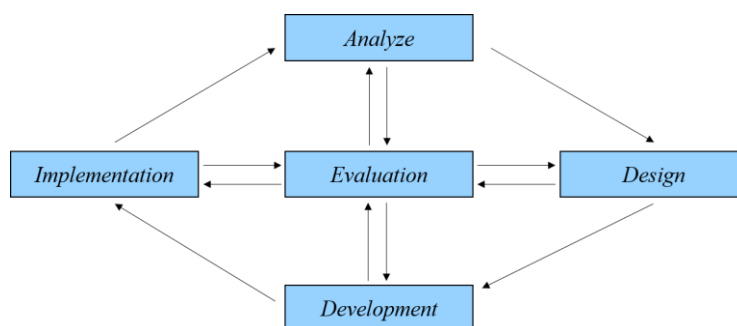

Figure 1. Module Development Research Design Using the ADDIE Model
(Source:Krismony et al., 2020)

The test subjects in this research were five media experts and five material experts as validators to assess the feasibility of the module, fifteen teachers as practitioners to assess the practicality of the module, and twenty fifth grade elementary school students as subjects to determine the effectiveness of the module in increasing learning motivation. student. The types of data collected in this research are qualitative data and quantitative data. Qualitative data is data presented in the form of descriptions of words or sentences, where in this research the qualitative data obtained is in the form of a literature review as well as suggestions and input from experts and practitioners regarding the feasibility and practicality of the module. Meanwhile, quantitative data is data presented in the form of numbers or scores obtained from material expert validation results, media expert validation results, practicality test results, and module effectiveness test results. The data collection methods used in research on the development of augmented reality learning modules are the observation method, interview method and questionnaire method. The data collection instrument used in this research is a questionnaire with a rating scale type using a scale of 1 to 5. The instrument grid used in research on the development of learning modules containing augmented reality can be seen in Table 1, Table 2, Table 3, and Table 4.

Table 1. Media Expert Validation Instrument Grid

No	Aspect	Indicator	No. Item	Number of Items
1	Format	Use of supporting elements	1,2	2
2	Attractiveness	The aesthetic value of the display	3, 4, 5	3
3	AR letters, images	Accurate size and type of letters	6, 7	2
	and objects	Quality of AR images and objects	8, 9	2
4	Presentation	Proportions and layout	10, 11	2
		Consistency of presentation	12, 13	2
5	Adaptive	Adapting to technological developments	14, 15	2
Number of Items				**15**

(S. Sirate & Ramadhana, 2017)

Table 2. Material Expert Validation Instrument Grid

No	Aspect	Indicator	No. Item	Number of Items
1	Self Instruction	Clarity of learning objectives and materials	1, 2, 3	3
		Learning material is supported by examples	4, 5, 6	3
		Practice questions relevant to the material	7, 8	2
		Availability of material summaries	9, 10	2
2	Self Contained	Contains complete material in one KD	11, 12	2
3	User Friendly	Ease of user access	13, 14, 15	3
Number of Items				**15**

(S. Sirate & Ramadhana, 2017)

Table 3. Practicality Test Instrument Grid

No	Aspect	Indicator	No. Item	Number of Items
1	Appearance	Aesthetic value and attractive appearance	1, 2, 3, 4	4
2	Presentation	Presentation of module components	5, 6, 7, 8	4
3	Usefulness	Usefulness of the module for users	9, 10, 11	3
4	User Friendly	Ease of user access to information	12, 13, 14, 15	4
Number of Items				**15**

(S. Sirate & Ramadhana, 2017)

Table 4. Learning Motivation Instrument Grid

No	Aspect	Indicator	No. Item (+)	No. Item (-)	Number of Items
1	Perseverance in	School attendance			2
	learning	Follow the learning process in class	1	2	2
		Study outside school hours	3	4	2
2	Tenacious in	Attitude towards difficulties	5	6	2
	facing difficulties	Efforts to overcome difficulties	7, 8	-	2
4	Interest and	Habits in participating in learning	10	9	3
	attention to	Passionate about learning	11, 13	12	2
	learning				
5	Achievement and	Desire to achieve	-	14, 15	2
	independent	Completion of tasks and results	19	18, 20	3
Number of Items			**10**	**10**	**20**

(Andriani & Rasto, 2019)

The data analysis method used in research on the development of learning modules containing augmented reality is a qualitative descriptive data analysis method and a quantitative descriptive method. The qualitative descriptive data analysis method is a way of processing data by systematically arranging words or sentences so as to obtain general conclusions. The qualitative descriptive method is used to process data in the form of suggestions and input as material for revising products based on the results of tests by media experts, material experts, practicality tests and effectiveness tests. Meanwhile, the quantitative descriptive analysis method is a way of systematically processing data in the form of numbers or scores related to an object being studied from the results of validity tests by material experts and media experts, practicality test results, and effectiveness test results, so as to obtain general conclusions.

3. RESULT AND DISCUSSION

Results

Learning modules containing augmented reality can be produced by carrying out development procedures according to the stages in the ADDIE development model which consists of five stages including: Analyze, Design, Development, Implementation, and Evaluation. This analysis stage is carried out through several stages, namely needs analysis, characteristics analysis, curriculum analysis, and learning resource analysis. The needs analysis stage obtained results that the use of digital teaching materials was still relatively rarely used, and the depth of teaching material in the teaching materials used was said to be complete but the material presented in the teaching materials used was still lacking in depth. The characteristic analysis carried out showed that class V students were still in the concrete operational period. At this stage it was also found that class V students were more interested in learning with digital media, such as using laptops and smartphones to understand the material they were studying. Apart from that, class V students, especially at SD No. 2 Carangsari, also have quite good reading and using digital devices, so they can operate digital teaching materials independently.

Based on the results of analyzing the basic competencies of the 2013 curriculum in Minister of Education and Culture Regulation No. 21 of 2016, especially in fifth grade in science learning, basic competencies were obtained in Theme 2, namely explaining the respiratory organs and their functions in animals and humans, as well as how to maintain the health of human respiratory organs. These basic competencies are then reduced to indicators of competency achievement and learning objectives. The analysis of learning resources carried out showed that a good learning module in order to increase learning motivation must pay attention to several required module characteristics, namely: self instructional, self contained, stand alone, adaptive and user friendly. Self-instruction is a characteristic that allows someone to learn independently and not depend on other people. Self contained means that all the required learning material is contained in the module. The presentation of the material in its entirety aims to provide students with the opportunity to learn it thoroughly. Stand alone is a characteristic of a module that does not depend on other teaching materials, or does not have to be combined with other teaching materials. Adaptive means that the module should have high adaptability to developments in science and technology. Meanwhile, user friendly means that the module should be friendly to the user. The ease of users responding and accessing according to their wishes is an important factor. Using simple, easy to understand language and using commonly used terms is a form of user friendliness.

The design stage is divided into two parts, namely creating a module design and creating an augmented reality viewer application design. At this stage the product design is produced. The module consists of a cover, foreword, table of contents, basic competencies, indicators of competency achievement, learning objectives, instructions for using the module, material about the human and animal respiratory system, summary, quiz, self-reflection, and bibliography. The module is made on A4 size paper and uses the left, right, top and bottom margin format respectively, namely 4-3-3-3. The module cover was created using the Canva application, while the module content was created using Microsoft Word 2013. The augmented reality viewer application was created using Unity and Vuforia software. The application is also equipped with videos and games/quizzes. The module designed refers to the 2017 revised edition of the 2013 curriculum. The material presented is class V material on Theme 2: Clean Air for Health, especially on the topic of the human and animal respiratory system. The material contained in this topic includes an introduction to the respiratory system organs in humans and animals and their functions, the respiratory process in humans and animals based on the classification of types, diseases/disorders of the human respiratory system, and how to maintain the health of human respiratory organs. Meanwhile, the augmented reality viewer application is designed and equipped with several features such as a 3D object viewer, learning videos, and games/quizzes that students can complete digitally. Next, the design is consulted with the supervisor to obtain input on the initial product design that has been created. Some of the input given by the supervisor was paying attention to the linguistic aspects used in the module as well as the use of color contrast in the design of the module being designed. Based on the input provided, improvements are then made before the design of the learning module containing augmented reality is realized into a complete product that is ready to be tested on experts, practitioners and students.

The development stage is the stage for realizing a product that has previously been designed. The product consists of a learning module and an augmented reality viewer application. The learning module was created using Microsoft Word 2013 and Canva software. Meanwhile, the augmented reality viewer application was created using the Unity and Vuforia programs. Based on the design that has been made, the appearance of the resulting product can be seen in Figure 2.
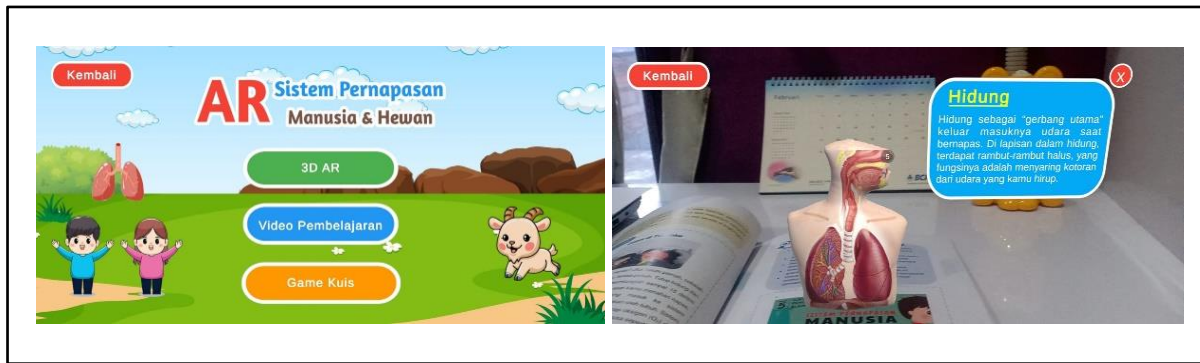
Figure 2. AR Viewer Application Display

At the development stage, validity tests and product practicality tests are also carried out. The validity test was carried out by five media experts and five material experts. Based on the results of the validity test, the validity score obtained from the perspective of material experts and media experts was 0.95, so that the product developed was declared valid with a special index. Meanwhile, the practicality test was carried out by fifteen class V teachers as practitioners. The results of the practicality test carried out obtained an average practicality score of 66.07 with the practicality category being classified as very practical. Measuring the level of practicality of learning modules containing augmented reality was carried out by analyzing data from questionnaires for 15 fifth grade teachers as practitioners. The assessment on the questionnaire uses a Likert scale with five scales, namely 1 (not practical), 2 (very impractical), 3 (less practical), 4 (practical), and 5 (very practical). Learning modules containing augmented reality can be said to be practical if they obtain an average score of more than 3.42. Meanwhile, the results of the practicality test that had been carried out obtained an average practicality score of 4.40 so that the resulting learning module containing augmented reality obtained positive results and was included in the very practical category. Based on these results, the product is declared valid and practical for use in learning so that it can be continued at the implementation stage. The implementation phase was carried out by applying the product to twenty fifth grade elementary school students as research subjects to determine the effectiveness of the product in increasing students' learning motivation. The effectiveness testing stage was carried out experimentally using a one group post test only design. At the implementation stage, the results were obtained that there was a significant influence of the module containing augmented reality on the learning motivation of fifth grade elementary school students with the purity of effectiveness being classified as sufficient.

Discussion

This research produces a product in the form of an augmented reality module that can display objects in three dimensions (3D) with the help of an application on an Android device, so that the use of this module must also be supported by an Android device. Based on the results of the tests that have been carried out, the product being developed is also improved/revised in accordance with the input and suggestions obtained during the product trial, resulting in a learning module containing augmented reality that is feasible/valid, practical, and effectively used to increase student learning motivation. The module developed is declared valid, practical and effective because it has gone through a series of development stages using the ADDIE development procedure which consists of five stages, namely the analysis stage, design stage, development stage, implementation stage and evaluation stage, thus producing a module whose quality has been tested (Cahyadi, 2019; Puspasari, 2019). The development of a learning module containing augmented reality obtained feasibility results with a special validity index both in terms of material experts and in terms of media experts. This is because in terms of material validity, the module developed has fulfilled the self-instruction aspect, including in the module the learning objectives have been conveyed clearly and in accordance with the rules for writing learning objectives (containing elements of audience, behavior, condition and degree). Explanations of the material are also supported by providing illustrative examples in the form of images, 3D objects and videos, so that the material can be more concrete/real. The modules and applications are also equipped with practice questions presented through quizzes and games that are relevant to the material and students' environment, and the modules also provide material summaries and feedback in the form of self-reflection as a forum for improving student learning outcomes (S. Sirate & Ramadhana, 2017; Setiyadi, 2017).

The module developed also meets the self-contained aspect, namely containing all learning material in one competency standard as a whole which is included in the module and application (Febrianti et al., 2017; Wulansari et al., 2018). The module developed contains fifth grade elementary school material on basic competency 3.6 Explaining the respiratory organs in animals and humans and how to maintain the health of human respiratory organs. The presentation of the material starts with an introduction to the respiratory organs in humans and their functions, an explanation of the respiratory process in humans, respiratory disorders in humans, and how to maintain human respiratory health, then continues with an introduction to the respiratory organs in animals and their functions, as well as an explanation of the respiratory process in animals based on their types (Febrianti et al., 2017; Wulansari et al., 2018). Another important aspect that has been fulfilled by the developed module so that the module can be said to be valid from the perspective of material experts is that it fulfills the user friendly aspect, namely the ease of users responding to and accessing information (Fatmawati et al., 2018; Khoirunnisa et al., 2020). This is supported by clear instructions/instructions in the module so that students can independently understand the steps that must be taken while studying using the module being developed. Illustrations that support and suit student characteristics also make it easier for students to understand the material contained in the module so that they do not cause misperceptions (Fatmawati et al., 2018; Khoirunnisa et al., 2020). Apart from that, the ease of students accessing modules which is also assisted by digital applications makes students even happier to learn because students nowadays are very interested in digital things. The existence of application assistance can also provide students with space to access information in more depth (Fatmawati et al., 2018; Khoirunnisa et al., 2020).

Based on these three aspects that have been fulfilled, the module developed can obtain validity results from the perspective of material experts with a special index. This is also supported by research on developing literacy skills-based learning modules and research on developing modules using a scientific approach, where both studies found that the results of the modules developed were valid, practical and effective in use (Khoirunnisa et al., 2020; S. Sirate & Ramadhana, 2017; Septora, 2017). This is because in both studies it was stated that the fulfillment of module characteristics which include self-instruction, self-contained, and user friendly determines that a teaching material is valid or appropriate, practical, and effective for independent use to achieve the expected competencies. Meanwhile, the validity of the module in terms of media experts also obtained validity results with a special index. This is because the design of the module and application in terms of appearance pays attention to aesthetic values such as the use of letters, the quality of the images and augmented reality objects used, the attractiveness of the module, the format of the module used and the layout of the presentation of the elements in the module which are made proportionally making the module attractive. more interesting and worth using (Fatmawati et al., 2018; Febrianti et al., 2017).

The use of clear font sizes and types in augmented reality display modules and applications influences the ease of users, especially students, in reading or understanding the information presented. The quality/clarity of image resolution and augmented reality objects used makes it easier for students to see and understand material that is abstract or difficult to imagine (From & Sudatha, 2022; Simamora et al., 2019). A uniform image layout can support the aesthetic value of the module displayed so that it does not interfere with students' views when using the module (From & Sudatha, 2022; Simamora et al., 2019). Apart from that, what is no less important is that the use of background color contrast with the writing used must also follow the rules of dark on light or light on dark, so that it does not interfere with the student's vision as a user when reading (Khoirunnisa et al., 2020; Wulansari et al., 2018). This is also supported by research on developing literacy skills-based learning modules and research on developing modules using a scientific approach, where in both studies the design or appearance of the module greatly influences students' comfort as users in using the module (S. Sirate & Ramadhana, 2017; Septora, 2017). A module that has been well designed by fulfilling several aspects of appearance such as attractiveness, use of letters and illustrations, color contrast, presentation, and the format used adds to the suitability of a module as teaching material. The better the quality of the appearance of the teaching materials, the better the quality of the suitability of the teaching materials (S. Sirate & Ramadhana, 2017; Septora, 2017).

The module developed can obtain very practical results because, based on the results of the teacher's response, the resulting module meets several practical aspects in terms of appearance, presentation, usefulness, and ease of use of the module to obtain information (Triandini et al., 2021; Windarti, 2015). This is also supported by several studies which say that the practicality of teaching materials such as learning modules is determined by the positive response of teachers or students as users to these teaching materials. Ease of user access to information, ease of understanding instructions, usefulness of modules for users are aspects that really need to be considered in making teaching materials so that they are practical to use (Hartoto et al., 2021; Suastika & Rahmawati, 2019). The effectiveness of the learning module developed on student learning motivation was carried out by analyzing the results of

distributing learning motivation questionnaires to 20 fifth grade elementary school students at SD No. 2 Carangsari. There is a significant influence of learning modules containing augmented reality on the learning motivation of fifth grade elementary school students with the purity of effectiveness being classified as moderate. The learning module containing augmented reality is effective for increasing student learning motivation because this module has several advantages. The module becomes more interactive because it contains augmented reality with the help of an application that can be downloaded on a smartphone to display it digitally. The existence of illustrative images, videos and augmented reality can reduce the verbal elements in the module, so that it uses various senses. The augmented reality viewer application is also equipped with games and quizzes so that it is more interesting for students, equipped with instructions for each step of use which are supported by images, so that students can more easily understand the steps that must be carried out, and is equipped with feedback that allows students to carry out self-assessments . These various advantages have a positive impact on students' learning motivation to understand the topics discussed because they follow the rules, characteristics and principles of module development.

This finding is reinforced by previous research findings stating the effectiveness of project based learning e-module development stated that, to obtain e-modules that are effectively used (From & Sudatha, 2022; Khoirunnisa et al., 2020; Laili et al., 2019; Triandini et al., 2021). Apart from the advantages, there are several disadvantages to the product being developed, namely: it requires a digital device in the form of an Android smartphone, and the application file size is still quite large. Based on these shortcomings, it is hoped that further research can develop a similar product that can be accessed via iOS devices with a more compact application file size. Apart from that, the use of augmented reality learning modules, especially in elementary schools, is expected to remain under supervision by teachers, parents or adults because it involves the use of technological devices in the form of smartphones to avoid things that deviate from learning.

4. CONCLUSION

The learning module containing augmented reality on the topic of the human and animal respiratory system obtained valid and practical results for use in the learning process. The implications of this research are that learning modules can help students to learn independently and can increase student learning motivation, so that they can achieve learning goals well.

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