



Interactive Learning Multimedia Using Contextual Approach for Students in Fifth Grade of Elementary School

Syifa'ul Fauziyah^{1*}, I Gde Wawan Sudatha², I Komang Sudarma³ 

^{1,2,3}Teknologi Pendidikan, Ilmu Pendidikan Psikologi dan Bimbingan, Universitas Pendidikan Ganesha, Singaraja, Indonesia

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ABSTRAK

Belum adanya media pembelajaran yang mampu memfasilitasi pembelajaran sehingga siswa cenderung pasif dan berdampak pada rendahnya hasil belajar siswa. Tujuan penelitian ini untuk mengembangkan multimedia pembelajaran interaktif berpendekatan kontekstual dalam meningkatkan hasil belajar IPAS siswa kelas V Sekolah Dasar. Penelitian ini merupakan penelitian pengembangan dengan model pengembangan ADDIE (Analyze, Design, Development, Implementation, Evaluation). Metode pengumpulan data yang digunakan pada penelitian ini ialah observasi, wawancara, kuisisioner, dan tes. Analisis data yang digunakan yaitu deskriptif kualitatif dan deskriptif kuantitatif. Hasil penelitian ini yaitu uji validitas ahli dengan kualifikasi sangat baik kategori ahli isi materi pembelajaran 100%, ahli desain pembelajaran 94,66%, ahli media pembelajaran 93,33%. Hasil uji coba produk pada uji coba perorangan 94,28%, dan uji coba kelompok kecil 92,85% dengan kualifikasi sangat baik. Hasil uji efektivitas penerapan multimedia pembelajaran interaktif dengan rata-rata pre-test 55,83 dan rata-rata post-test 89,17. Penelitian ini berimplikasi pada multimedia pembelajaran interaktif mampu meningkatkan hasil belajar siswa dengan pendekatan kontekstual agar pembelajaran lebih bermakna. Dapat disimpulkan bahwa multimedia pembelajaran interaktif berpendekatan kontekstual dinyatakan valid dan efektif dalam meningkatkan hasil belajar pada mata pelajaran IPAS bagi siswa kelas V Sekolah Dasar.

ABSTRACT

There is no learning media that can facilitate learning so that students tend to be passive and have an impact on low student learning outcomes. The purpose of this study is to develop interactive learning multimedia with a contextual approach to improve the learning outcomes of fifth grade elementary school students in science. This study is development research with the ADDIE (Analyze, Design, Development, Implementation, Evaluation) development model. The data collection methods used in this study are observation, interviews, questionnaires, and tests. The data analysis used is descriptive qualitative and descriptive quantitative. The results of this study are expert validity tests with very good qualifications in the category of 100% learning material content experts, 94.66% learning design experts, and 93.33% learning media experts. The results of the product trial on individual trials were 94.28%, and small group trials were 92.85% with very good qualifications. The results of the effectiveness test of the application of interactive learning multimedia with an average pre-test of 55.83 and an average post-test of 89.17. This study has implications for interactive learning multimedia being able to improve student learning outcomes with a contextual approach so that learning is more meaningful. It can be concluded that interactive learning multimedia with a contextual approach is stated to be valid and effective in improving learning outcomes in the subject of science for grade V Elementary School students.

1. INTRODUCTION

The development of technology today continues to grow rapidly. In this case, education is very important to ensure the survival of the state and nation, which of course has developed along with the progress of the times. Currently, students in elementary schools are classified as the Alpha generation. The Alpha generation is the generation that is most familiar with digital technology and the generation that is claimed to be the smartest compared to previous generations (Made et al., 2022; Novianti et al., 2019). In

the world of education, technology plays an important role, especially for students for more effective, innovative, and varied learning. Technology is developing rapidly along with the current development of globalization, thus in utilizing technology in education, teachers are able to master and utilize technology in the learning process (Mukaromah, 2020; Nuryana et al., 2021). Technology in education can be used to facilitate educators and students in the learning process at school (Alyusfitri et al., 2020; Nurillahwaty, 2022). The use of technology in education must be able to facilitate students in the learning process and provide teachers with the ease of conveying information in the form of materials and lesson objectives to be delivered to students.

However, along with the development of technology today, it is not uncommon to find that teachers still apply learning with a conventional approach. The conventional approach is a method that combines various learning methods such as lectures, assignments and questions and answers so that the learning process is centered on the teacher who dominates learning activities (teacher centered) (Hardiyana, 2016; Prasetya, 2015). This is certainly in accordance with the facts in the field that in the learning process, grade V elementary school teachers still apply conventional learning with lecture and question and answer methods. This learning is more dominated by teachers who play an active role in organizing the learning process as knowledge transferors, while students are more passive as recipients of knowledge so that the learning process that takes place tends to be boring and monotonous.

The results of observations conducted at SD Negeri 4 Banyuasri showed that the learning methods used were lectures, questions and answers, and exercises. The learning resources used were limited to teacher books, student books, and teaching modules. The difficulties experienced by teachers in teaching were students who were enthusiastic about interesting learning but teachers had not been able to facilitate this so that the media used were only in the form of presenting images via LCD projectors and supporting images printed manually. The difficulties experienced by students in class were that they did not understand the science learning material in chapter 8 My Dear Earth, My Malang Earth because it was not linked to real examples so that students' understanding became abstract. The results of the needs analysis questionnaire distributed to 30 fifth grade students at SD Negeri 4 Banyuasri were that 63% of students responded that teachers rarely applied learning media in class and 93% of students chose to develop learning media to support their learning process in class. Therefore, to make learning more varied, interesting, and innovative, interactive learning media must be developed to support learning Fitri et al., 2020; Rianto & Budiarti, 2021).

As for the results of document recording, 30 students in class V obtained an average daily test result in the subject of Social Sciences, namely 69.66 with a fairly low category, this value is certainly still below the KKTP, namely 74. There are several factors that cause the low average obtained by students, namely the lack of motivation to learn during learning activities because learning takes place monotonously, tends to be boring, and the lack of ability to facilitate the learning process through the use of learning media that can attract students' attention and interest in learning. This is due to the inability of teachers to use technology and the facilities and infrastructure provided by the school. The learning process that occurs in the classroom is less varied and effective Dwi Agus Setiawan & Nur Kumala, 2020; Safira et al., 2021).

Based on these problems, a change and solution are needed to solve the problems faced by teachers and students of grade V at SD Negeri 4 Banyuasri, namely by implementing learning media that facilitate the dissemination and reception of information such as knowledge on learning materials. Learning media is a tool used to support the teaching and learning process so that the objectives and meaning of the lesson can be conveyed more clearly so that learning activities are carried out more effectively and efficiently (Alyusfitri et al., 2020; Widiyastuti et al., 2019). Learning media greatly helps students capture and receive learning materials. Learning media is also used to increase the effectiveness of learning in order to achieve learning goals. Learning media is one type of learning media that is widely used to facilitate learning. Interactive learning multimedia is a media that uses various media such as graphics, audio, video, animation, and images (Buchori, 2019; Putra, 2021). Multimedia learning is a computer-based interactive communication system that is presented in an integrated manner (Patricia & Zamzam, 2020; Sudatha & Tegeh, 2015). Multimedia learning has the ability to package the learning process to be more interesting, for example by combining display elements with other elements. There are several advantages, especially from the application and use of multimedia learning in the learning process, as follows: (1) increasing student motivation to learn in an interesting way, (2) learning materials are clearer and easier for students to understand, (3) more varied learning methods, and (4) student-centered learning. Therefore, the contextual learning approach is a learning method that can help students use interactive multimedia learning when learning.

The developed learning media can be combined with an appropriate learning approach, one of which is the contextual learning approach. This contextual learning is a learning system that emphasizes more on teachers facilitating students to learn material that can then be linked to real situations so that

students can relate what they have learned to the context of their personal, social, and cultural lives (Okpatrioka, 2023; Romli, 2022). Thus, contextual learning is expected to be able to improve understanding and motivate students in learning, especially in the subject of science by linking it to daily life activities. Natural and Social Sciences (IPAS) is a science that investigates the interaction of inanimate objects and living things in the universe and how they interact with each other, in addition, IPAS also investigates human life as individuals and as social beings who interact with their environment (Mukaromah, 2020; Sari & Hanif, 2023).

This research is supported by previous research related to the development of learning multimedia. The research states that interactive learning multimedia can help students understand concepts and allow students to practice ideas independently outside the classroom (Diyana, N et al., 2019; Dwi Agus Setiawan & Nur Kumala, 2020). Second, research states that learning multimedia has great potential to help the learning process. Learning multimedia can also improve student learning outcomes (Patricia & Zamzam, 2020; Putra, 2021). Third, research states that interactive learning multimedia can be used as a learning medium with various features that can be adjusted to student needs and facilitate students with various visual, auditory, and kinesthetic learning styles (Arisanti & Adnan, 2021; Geni et al., 2020). In addition, it is also supported by research related to contextual learning. The research states that contextual learning can help students understand concepts more meaningfully and make it easier to remember and apply in everyday life (Made et al., 2022; Putra, 2021). Based on the relevant research, this research has a novel value that lies in the integration of multimedia technology with a contextual approach that has not been widely applied at the elementary school level. This research introduces a more dynamic and interactive learning method, which combines visual, audio, and user interaction elements to enrich students' learning experiences.

Based on what is mentioned above, the purpose of this development research is to explain the design of interactive learning multimedia development, as well as analyze the validity of interactive learning multimedia, and analyze the effectiveness of using interactive learning media based on a contextual approach in science subjects for students in grade V of SD Negeri 4 Banyuasri in the 2023/2024 school year. The novelty of this research is expected that learning problems can be solved by using interactive learning multimedia that is adjusted to the analysis of the needs and learning styles of students. In addition, with this development, teachers are expected to be motivated to improve the quality of learning media so that they can facilitate students in learning by using all the tools and equipment available at school.

2. METHOD

This research is included in the category of research and development (Research and Development). Research and Development is one of the various research models used in creating certain products from a case and testing the effectiveness of the resulting product (Andrianingrum & Suparman, 2019; Okpatrioka, 2023). ADDIE Model (Analyze, Design, Development, Implementation, Evaluation) is a development design model used in this interactive learning multimedia research.. The ADDIE model is a systematic development design model (Arisanti & Adnan, 2021; Geni et al., 2020). The selection of this model is based on the fact that the model is developed systematically and is based on the theoretical basis of learning design. The ADDIE model allows for evaluation opportunities on development products at each stage. Thus, the quality of development products will improve and provide a positive impact on the development process. The development design model used, namely ADDIE, consists of five steps: (1) Analysis, (2) Design, (3) Development, (4) Implementation, and (5) Evaluation.

There are two types of data used by researchers when conducting research and development, namely qualitative data and quantitative data. Qualitative data is data that describes variables or subjects in the form of characteristics, categories, criteria, and classifications (Agung, 2018; Tegeh, 2017). Qualitative data is also defined as data that cannot be measured with numbers. This data is obtained based on comments and suggestions from experts and students. While quantitative data is data that shows the condition of an object or variable in the form of numbers. The subjects involved in this study consisted of 1 expert in learning material content, 1 expert in learning design, and 1 expert in learning media. The subjects of the product trial were 3 students in the individual test, and 9 students in the small group test. The subjects in the effectiveness test were 30 students.

In this development research, observation, interview, questionnaire, and test methods were used to collect data. The planned observation process of an object with the aim of obtaining relevant data or information is called the observation method. Observation is carried out by observing the learning process in the classroom and analyzing the learning situation and learning problems faced by teachers and students during the learning process. The interview method is a method used to collect information in research. The results show that although schools have adequate facilities and infrastructure, teachers almost never use

digital-based learning media to help students learn because of the limited ability of teachers to operate electronic devices. Indicators of program display and the feasibility of the products made can be measured through the questionnaire method. The questionnaires distributed at the observation stage are student needs analysis instruments and student learning style questionnaires to determine student needs in learning. There are also product instruments that include two stages, namely expert validity test instruments and product trial instruments. The test method is a data collection technique used to determine the score or value of students. This test method is used to determine the effectiveness of the product developed based on the results of students' pre-test and post-test learning.

Before entering the interactive learning multimedia implementation stage, the product must be tested for feasibility by experts such as learning design experts, learning media experts, and learning material content experts using instrument sheets. In addition, there are also product trials conducted on students to determine the ease of operating interactive learning multimedia such as individual tests and small group tests. The grids used to test the feasibility or validity of products from learning material content experts, learning design experts, learning media experts, individual tests, and small group tests are presented in Table 1, Table 2, Table 3, and Table 4.

The validity test instrument of the learning material content expert is used to identify the material used in the development of interactive learning multimedia products to suit the curriculum and learning objectives in the material My Dear Earth, My Malang Earth for the fifth-grade science subject. The following is a grid of the learning material content expert instrument presented in Table 1.

Table 1. The Expert Instrument Grid Content Learning Material

No.	Aspect	Indicator	Item No.	Number of Items
1.	Curriculum	1. The material presented is in accordance with learning objectives	1	2
		2. Suitability of material to topic	2	
2.	Material	1. The material presented is easy to understand	3	5
		2. The material presented is in accordance with the examples given	4	
		3. The material presented is in accordance with students' real life.	5	
		4. Accuracy of explanation of presentation of material in the media	6	
		5. The material presented is interesting	7	
3.	Linguistics	1. The language used in delivering the material is easy to understand.	8	2
		2. The language used is consistent and precise	9	
4.	Evaluation	1. Suitability of the questions presented with learning objectives	10	3
		2. Suitability of questions to the material presented	11	
		3. The questions presented are easy to understand	12	
Amount				12

The learning design expert validity test instrument is used to determine the quality of the learning design presented in the developed product, namely in the form of interactive learning multimedia. The following is a grid of the learning design expert instrument presented in Table 2.

Table 2. The Learning Design Expert Instrument Grid

No.	Aspect	Indicator	Item No.	Number of Items
1.	Objective	1. Clarity of learning objectives with materials	1	3
		2. The material presented is in line with learning objectives	2	
		3. Consistency between learning objectives, material content, and evaluation questions	3	
2.	Appearance	1. Interest in media display	4	3
		2. Clarity in components (text, images, audio, video, animation) in the media	5	
		3. Prompt delivery of instructions for use		

No.	Aspect	Indicator	Item No.	Number of Items
3.	Material	1. The delivery of the material provides logical steps for the user.	6	3
		2. The attractiveness of the material delivery	7	
		3. Compliance of material with image illustrations	8	
4.	Strategy	1. Suitability of delivery strategies with learning objectives	9	3
		2. Able to attract students' learning motivation	10	
		3. The attractiveness of the content presented in the media	11	
5.	Evaluation	1. Reflection is carried out according to the material presented	12	3
		2. Accuracy of giving exercises (quizzes)	13	
		3. The instructions for completing the quiz are clear.	14	
Amount				14

The learning media expert validity test instrument is used to determine the quality of products made in accordance with the principles of learning message design and to find out whether the product is suitable for use to facilitate student learning. The following is a grid of learning media expert instruments presented in Table 3.

Table 3. The Media Learning Expert Instrument Grid

No.	Aspect	Indicator	Item No.	Number of Items
1.	Text Aspects	Text clarity (text readability), text presentation, text size and type	1, 2, 3	3
2.	Image Aspects	Image layout, quality, color balance and image attractiveness	4, 5, 6	3
3.	Animation Aspects	The quality, attractiveness and suitability of the animation to the material presented	7, 8	2
4.	Audio Aspects	Clarity and appropriateness of use of sound/music and narrator	9, 10	2
5.	Packaging Access	The attractiveness of the cover with media content, material packaging and interesting quizzes	11, 12, 13	3
6.	Accessibility Aspects	Ease of access/use of interactive learning multimedia and smooth interactive links	14, 15	2
Amount				15

Individual and small group trial instruments were used to measure students' reactions or responses after operating the developed product, namely interactive learning multimedia based on a contextual approach. The trial of this product was conducted on upper-class students from the research class, namely on grade VI students who had studied the learning materials included in the development product. The following is a grid of individual and small group trial instruments presented in Table 4.

Table 4. The Individual and Small Group Trial Instrument Grid

No.	Aspect	Indicator	Item No.	Number of Items
1.	Attraction Aspect	1. Ease of use	1, 2, 3, 4	14
		2. The attractiveness and accuracy of the text presentation, images, animation, language and sound	5, 6, 7, 8, 9, 10, 11	
		3. Ease, interest and motivation in learning	12, 13	
		4. Evaluation	14	
Amount				14

In this study, the trial subjects of the product from the interactive learning multimedia development research with a contextual approach were subjects at the expert review stage conducted by one expert judge of learning material content, one expert judge of learning design, and one expert judge of learning material who were competent in their fields. The individual test subjects were conducted by three students with the qualifications of one student with high, medium, and low learning outcomes. The small group test stage was conducted by nine students who were divided into three categories, namely three students who had low learning outcomes, three students who had medium learning outcomes, and three students with high learning outcomes. The aim was to collect user responses or responses to the interactive learning multimedia products that had been developed before entering the implementation stage in the learning process. And at the effectiveness test stage, it was conducted on students in the target class, namely students in grade V of SD Negeri 4 Banyuasri. The effectiveness test was conducted to determine how effective the product that had been developed, namely interactive learning multimedia based on a contextual approach, was in improving student learning outcomes. To test the effectiveness of the product, students were given questions in the form of pre-tests and post-tests. Table 5 shows the references used in decision making to develop interactive learning multimedia based on a contextual approach.

Table 5. The Conversion of Achievement Level with Scale

Achievement Level %	Qualification	Information
90-100	Very good	No need to revise
80-89	Good	Slightly revised
65-79	Enough	Revised as needed
55-64	Not enough	Many things were revised
0-54	Very less	Repeatedly making products

3. RESULT AND DISCUSSION

Result

The results of this development research discuss three things, namely the design of interactive learning multimedia development, the results of the validity test of interactive learning multimedia development, and the effectiveness of using interactive learning multimedia. The design of this product development refers to the ADDIE development model. The ADDIE model is one of the systematic models. The ADDIE development research model consists of five steps: analysis, design, development, implementation, and evaluation.

The first stage is analysis. The purpose of this stage is to obtain data and information needed for the media development process. At the analysis stage, the actions taken are as follows: (1) needs analysis; until now the learning method used is still dominated by the lecture method. The teacher also conveyed the difficulties he experienced during teaching, namely that students are very interested in interesting learning, but the teacher has not been able to facilitate this in the learning process due to age factors and limitations in using technology and making interesting and interactive media. There are still many students who have low learning skills in the subject of science due to a lack of motivation to learn during learning activities so that learning takes place monotonously and tends to be boring; (2) analysis of the learning environment, it is known that the school has been facilitated with several supporting tools for the learning process such as LCD and Projectors, chromebooks, internet access (WiFi), sound systems, and computer lab rooms, and class V students have participated in extracurricular computer activities; (3) material analysis, it is known that the teaching materials used by teachers during learning in class are only natural and social science books for class V SD and teaching modules. The material used in interactive learning multimedia is Bumiku Sayang, Bumiku Malang in chapter 8. Students have difficulty understanding the material because it is presented abstractly, so interactive learning multimedia is needed that is interesting and relevant to everyday life; and (4) analysis of student characteristics. The results of the distribution of needs analysis questionnaires to 30 students in class V of SD Negeri 4 Banyuasri were 63% responding that teachers rarely apply learning media in class and 93% agreed with the development of interactive learning multimedia to help the learning process in class. In addition, based on the distribution of learning style questionnaires, it is known that 38% of students tend to use visual learning styles, 37% of students use audio learning styles, and 25% of students use kinesthetic learning styles.

The process carried out in the second stage is design. In this product design stage, activities begin with the stage of designing a development product in the form of interactive learning multimedia. This stage includes: (1) making a flowchart and storyboard to determine the learning flow and sketch of interactive learning multimedia; (2) designing a media assessment instrument consisting of an expert test instrument for learning material content, an expert test instrument for learning design, an expert test instrument for

learning media, an individual trial instrument, and a small group trial instrument; and (3) designing a teaching module. This module helps direct student learning to achieve learning outcomes and objectives in the material.

The third stage is development. This stage is carried out by designing and producing products in the form of interactive learning multimedia. The first step in the product creation process that can be done is to find materials through teacher books, student books, teaching modules, and relevant internet sources so that they can be used to present materials in the interactive learning multimedia that is developed. Next, prepare the objects or components used to create media such as images, text, audio, buttons, animated characters, and learning videos that will be combined into a unit in the interactive learning multimedia development product called "MARIPAS (Let's Learn IPAS)". Creating-editing tools used to create media and edit multimedia elements are Corel Draw and Canva Pro and authoring tools used to combine and organize multimedia elements are Articulate Storyline 3.

The fourth stage is implementation. At this stage, experiments are conducted with the media that has been developed. This interactive learning multimedia focuses on the subject of science and natural sciences for fifth grade students at SD Negeri 4 Banyuasri. At this stage, implementation is conducted with the media that has been developed. This media focuses on the subject of science and natural sciences for fifth grade students at elementary school. From the implementation of the media, it is expected that it can be used in the learning process in the classroom and students' independent learning. This stage is conducted to determine students' responses to the attractiveness, feasibility, and effectiveness of using interactive learning multimedia in the learning process. There are two stages of product testing, namely (1) product validity testing is conducted by learning material content experts, learning design experts, and learning media experts; (2) product testing is conducted by students with individual trials and small group trials. In addition, there is also an effectiveness test conducted by providing a pre-test and post-test to determine how students' learning outcomes are before and after using interactive learning multimedia based on the contextual approach to science and natural sciences for fifth grade students at SD Negeri 4 Banyuasri.

The last stage is evaluation. At this stage, the development product will be evaluated and reviewed by learning content experts, learning design experts, and learning material experts. The assessment of interactive learning multimedia products is also carried out by students based on individual trials and small group trials. Thus, all input and suggestions will be accommodated and revised with the aim of improving the product to be better and the feasibility of interactive learning multimedia products can be known during the learning process.

The validity test of interactive learning multimedia development products is carried out to determine how valid and feasible the product is in the learning process. The instrument used to determine the validity test of the product will be tested on experts who are competent in their fields. The results of the product validity test on interactive learning multimedia development products with a percentage scale of 5 are presented in [Table 6](#).

Table 6. The Product Validity Test Results

No.	Test Subject	Percentage (%)	Information
1.	Expert Test of Learning Material Content	100%	Very good
2.	Learning Design Expert Test	94.66%	Very good
3.	Learning Media Expert Test	93.33%	Very good
4.	Individual Trial	94.28%	Very good
5.	Small Group Trial	92.85%	Very good

Taking into account the results of the validity test presented in [Table 6](#), it can be concluded that interactive learning multimedia based on a contextual approach to the subject of science for grade V students is valid and feasible to be used in the learning process of students with very good qualifications. The development product of interactive learning multimedia is adjusted to the feedback or reviews from learning material content experts, learning design experts, and learning media experts to perfect the development product. Therefore, the use of this product can help teachers to facilitate student learning with interesting and innovative media for learning. The results of the development of interactive learning multimedia products are presented in [Figure 1](#), [Figure 2](#), [Figure 3](#), and [Figure 4](#).



Figure 1. Introduction Page



Figure 2. Main Menu Page



Figure 3. Material Page

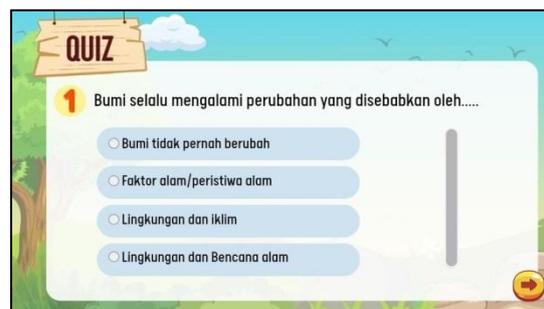


Figure 4. Quiz Page

To measure the effectiveness test, it is done by providing multiple choice question sheets in the form of pre-test and post-test. The pre-test is conducted before students start learning using interactive learning multimedia, while the post-test is conducted after students use interactive learning multimedia to learn. Then the test results are tested for data normality, data homogeneity, and conducting a t-test for correlated samples. It is known that student learning outcomes in the pre-test with an average of 55.83 and student learning outcomes in the post-test get a score of 89.17 which is above the KKTP of 74. Thus, it is known that the use of interactive learning multimedia with a contextual approach in the subject of science for grade V students has an effect on improving student learning outcomes, and is able to increase student enthusiasm and enthusiasm for learning. Based on the results of the t-test analysis, it is known that t count is 20.590. Furthermore, t count is compared with t table at 5% significance with $db = n_1 + n_2 - 2 = 30 + 30 - 2 = 60 - 2 = 58$ as much as 2.00172. The results show that $t_{count} > t_{table}$. Thus, H_0 is rejected and H_1 is accepted. And at a significance value (2-tailed) of $0.000 < 0.05$ indicates that there is a significant difference between the variables. It can be concluded that there is a significant difference between the pre-test and post-test learning outcomes before and after using interactive learning multimedia with a contextual approach in the subject of science for grade V students of SD Negeri 4 Banyuasri in the 2023/2024 academic year. Thus, it can be concluded that interactive learning multimedia is effective in improving student learning outcomes.

Discussion

The discussion of the research results refers to three main topics of discussion consisting of the design of interactive learning multimedia, the results of the interactive learning multimedia validity test, and the effectiveness of using interactive learning multimedia. By using the ADDIE development model, interactive learning multimedia is presented according to the five stages of its development such as analysis, design, development, implementation, and evaluation. This development model is used because it is systematic, clear, and easy (Arisanti & Adnan, 2021; Geni et al., 2020). This model is designed to solve learning problems with learning resources and meet the needs and characteristics of students. The use of this model affects the results of the validity of the development product which is declared suitable for use in the learning process because evaluation can be carried out at every stage of development, thereby reducing errors that occur since the beginning of the product development process. The assessment of the validity test carried out by experts and the results of product trials carried out by students indicate that interactive learning multimedia is in a very good qualification. The results of the effectiveness test indicate that interactive learning multimedia can improve student learning outcomes.

By considering the results of the judges' assessment, namely the content experts for interactive learning multimedia, the developed learning material obtained a score of 100% with very good qualifications. Based on the expert test instrument, this learning material consists of 4 components:

curriculum, material, language, and evaluation. In terms of the curriculum, the material presented is in accordance with the learning objectives to be achieved, and the content of the material is in accordance with the topic presented. Clear and measurable learning objectives can help students understand better and increase student involvement and motivation to participate in the learning process, resulting in an effective learning process (Deviyanti, 2024; Made et al., 2022). The presentation of material in interactive learning multimedia is based on activities in the student's environment, this is certainly related to the learning approach used, namely the contextual approach. Subject matter can be more easily understood by students if studied in the context of real life (Fitri et al., 2020; Rahmadani et al., 2023). The language aspect in delivering material in this interactive learning multimedia is easy to understand, consistent and clear. The next aspect is evaluation. Evaluation is an integral part of the learning process and cannot be separated from learning activities so it is very important to do because evaluation functions as a tool to measure student success in lessons and helps determine learning objectives (Idrus, 2019; Rianto & Budiarti, 2021). In this aspect, the questions presented at this stage are in accordance with the learning objectives and are easy for students to understand.

Referring to the assessment results by learning design experts on interactive learning multimedia, it scored 94.66% with very good qualifications. The instruments given to learning design experts consist of 5 aspects, namely objectives, appearance, materials, strategies, and evaluation. In terms of objectives, the preparation of learning objectives is an important part of the learning design development process (Deviyanti, 2024; Made et al., 2022). The learning objectives presented are in line with the material presented. In addition, the consistency between learning objectives, material content, and evaluation questions in the media is also classified as very good. In terms of appearance, the application of interactive learning multimedia can attract students' attention in the learning process. This is shown by the enthusiasm of students when using learning multimedia which gives a positive response when the implementation of interactive learning multimedia takes place. The appearance of the development of interactive learning multimedia is designed to be able to attract students' attention. The clarity of the components of interactive learning multimedia such as text, audio, learning videos, images, and animations plays an important role in facilitating student learning and increasing student motivation to learn. The clarity of the delivery of instructions for using the media has also been presented well so that students do not have difficulty in using interactive learning multimedia. The material aspect also plays an important role in improving student understanding after using interactive learning multimedia. The delivery of material is able to provide logical steps for students, in addition, the delivery of material must be presented in an interesting way to motivate students to learn so that they can improve their learning outcomes (Dwi Agus Setiawan & Nur Kumala, 2020; Safira et al., 2021). The material presented must be coherent and easy to understand by students and illustrations need to be presented that support student understanding to make it easier to understand the material. The strategy specification includes the use of interactive learning multimedia by explaining whether the strategy used is in accordance with learning objectives and can attract students' interest in learning. In addition, the content presented in the media needs to be arranged in an interesting way to make it easier for students to understand the learning material. This interactive learning multimedia is arranged based on components of the contextual approach. The last aspect is evaluation. In this aspect, students can reflect on the material that has been presented through interactive learning multimedia, then students can work on practice questions in the form of quizzes to easily understand the concept of the material in each topic of discussion.

Referring to the assessment results by learning material experts on interactive learning multimedia that was developed, it got a score of 93.33% with very good qualifications. The instruments given to learning design experts consisted of 6 aspects, namely text, images, animation, audio, packaging, and accessibility. In the text aspect, the selection of colors on the typeface with the background is appropriate, the accuracy in choosing the typeface is very important for the readability and clarity of the message to be conveyed. The selection of this typeface (typography) certainly uses the Sans Serif type such as Arial (Alyusfitri et al., 2020; Sudatha & Tegeh, 2015). The selection of the Sans Serif font is used for digital design because it does not have additional decorations or lines at the ends of the letters. In terms of images, the layout of the images presented is appropriate in accordance with the principles of learning message design so that they are conceptualized harmoniously. The layout of the message, both in text and in images, makes it very easy for readers. Images used in interactive learning multimedia must be in accordance with the material presented to minimize misunderstandings between the concept of the material and the images presented. The animation aspect is used to attract students' attention in using interactive learning multimedia. Interactive multimedia with animation can improve student learning outcomes by clarifying the material, facilitating the learning process, directing attention, increasing motivation, and enabling students' independent learning (Armansyah et al., 2019; Widiyastuti et al., 2019). To ensure that student learning outcomes improve after using interactive learning multimedia, animation elements are important to consider because

they can affect the improvement of student learning outcomes. In terms of audio, the music used is in accordance with the media, namely using instrumental music, in addition, this interactive learning multimedia also uses audio in the form of background, sound effects, and narrator voices. The use of instrumental music can make students more motivated to learn because music can make students excited to learn and relieve tension when completing activities (Putra, 2021; Syamsuardi et al., 2022). The packaging aspect of interactive learning multimedia that has been developed, starting from the appearance of the introductory page on this interactive learning multimedia is made attractively and in accordance with the contents of the media, starting from the balance between all existing components, such as media name, background color selection, font selection, font size, and objects or icons used in the media must be packaged attractively in order to attract students' attention to learn. The accessibility aspect focuses on ease of access or use in using interactive learning multimedia and the presentation of clear instructions for using the media. The instructions for using this media contain an explanation of the buttons used in interactive learning multimedia, thus this must be presented in detail and clearly because the buttons in interactive learning multimedia have different meanings.

The development of interactive learning multimedia is also said to be interesting and effective because it combines text, audio, images, videos, and animated characters that are combined to become interactive learning multimedia that can be applied by teachers and students in learning. The interactivity in this development product also contributes to student learning outcomes because the developed learning multimedia is able to attract students' interest in learning based on the results of the questionnaire distribution, so that at the implementation stage it is able to foster student learning motivation which was initially passive to become more active so that this will also affect the increasing student learning outcomes. This opinion is in line with research which states that the use of interactive learning multimedia is effective in the learning process to encourage students' interest in learning, in addition, learning will be more interactive because it is able to significantly improve student learning outcomes (Dwiqi et al., 2020; Patricia & Zamzam, 2020).

Learning using multimedia allows students to see and listen to text, audio, images, animations or videos simultaneously. By using interactive learning multimedia, learning becomes more interactive so that it allows visualization of material that is difficult to explain by teachers or through conventional teaching aids. Thus, the application of interactive learning multimedia for fifth grade students is able to motivate students, improve student learning outcomes, and create an environment that supports students to learn independently. So that the use of multimedia in learning can attract students' interest in learning and help students understand the material in an interactive way (Okpatrioka, 2023; Suryandaru, 2020). A contextual approach in the use of interactive learning multimedia in the learning process can help students understand the subject matter by relating it to everyday life supported by visual observations of interactive learning multimedia (Andrianingrum & Suparman, 2019; Rahmadani et al., 2023).

The results of this study are in line with previous studies related to the development of learning multimedia. The study stated that interactive learning multimedia can help students understand concepts and allow students to practice ideas independently outside the classroom (Diyana, N et al., 2019; Dwi Agus Setiawan & Nur Kumala, 2020). Then it is also in line with research which states that learning multimedia can improve student learning outcomes (Patricia & Zamzam, 2020; Putra, 2021). In line with research stating that interactive learning multimedia can be used as a learning medium with various features that can be adjusted to student needs and facilitate students with various visual, auditory, and kinesthetic learning styles (Arisanti & Adnan, 2021; Geni et al., 2020). In addition, the findings are also in line with the results of previous research related to contextual learning. The study stated that contextual learning can help students understand concepts more meaningfully and make it easier to remember and apply in everyday life (Made et al., 2022; Putra, 2021). Based on the comparison with previous findings, it can be stated that interactive learning multimedia with a contextual approach is valid and feasible to be used in learning, and is effective in improving student learning outcomes. By focusing on the relevance of students' daily life contexts, this approach not only improves the understanding of academic concepts but also increases learning engagement and motivation.

This research has advantages because it is able to increase student engagement and motivation to learn in a more interesting and interactive way, thus helping students understand the material better through contexts that are relevant to everyday life (Alyusfitri et al., 2020; Putra, 2021). The implication is that the use of multimedia can enrich teaching methods in the classroom and improve overall student learning outcomes. However, of course this study still has shortcomings, the shortcomings are the implementation that requires adequate technological infrastructure and the readiness of teachers and students in utilizing the multimedia devices. In addition, some students may have difficulty in initial adaptation to new technology. For further research, it is recommended that trials be conducted in various

school contexts with different infrastructure conditions and provide comprehensive training for teachers to maximize the use of this multimedia in the learning process.

4. CONCLUSION

Based on the findings of this study, it shows that the assessment of the learning material content experts, learning design experts, learning media experts, trials, and small group trials consecutively obtained very good qualifications. Thus, the development product is declared valid and suitable for use in the learning process. Furthermore, the results of the hypothesis test show that there is an increase in the pre-test and post-test results before and after using interactive learning multimedia in grade V students of SD Negeri 4 Banyuasri. Based on these findings, it can be concluded that interactive learning multimedia with a contextual approach in the subject of science is declared effective in improving student learning outcomes. Interactive learning multimedia is said to be effective because it combines text, audio, learning videos, images, and animated characters which are combined to become interactive learning multimedia that can be used by teachers to facilitate students in the learning process.

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