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Interactive Learning Multimedia with Problem-Based Learning for Fifth-Grade Elementary School Students

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ABSTRAK

Adanya keterbatasan dan kurangnya kemampuan guru dalam memanfaatkan teknologi untuk membuat bahan ajar penunjang yang inovatif bagi peserta didik. Tujuan dilakukannya penelitian ini yaitu mengembangkan multimedia pembelajaran interaktif. Jenis penelitian ini yaitu penelitian pengembangan dengan model ADDIE. Subjek yang terlibat dalam penelitian ini yakni ahli isi, ahli desain, ahli media, dan uji coba pada peserta didik. Pengumpulan data dilakukan menggunakan metode kuesioner dan metode tes, dengan instrument penilaian berupa tes hasil belajar serta lembar uji validitas produk media. Data yang diperoleh dalam penelitian kemudian dianalisis dengan menggunakan teknik analisis deskriptif kualitaitf, deskriptif kuantitatif dan analisis statistika inferensial uji-t. Hasil penelitian pengembangan ini menunjukkan bahwa rancang bangun pengembangan multimedia pembelajaran interaktif meliputi lima tahapan model ADDIE, validitas produk memperoleh hasil review ahli isi berkualifikasi sangat baik (93,33%), ahli desain berkualifikasi sangat baik (93,75%), ahli media berkualifikasi sangat baik (93,33%), hasil uji coba perorangan berkualifikasi sangat baik (93,66%), dan uji coba kelompok kecil berkualifikasi sangat baik (92,56%), hasil uji efektivitas multimedia memperoleh rerata pretest 51,57 dan rerata posttest 87,85. Disimpulkan bahwa multimedia pembelajaran interaktif berbasis problem based learning berada pada kualifikasi sangat baik dan layak untuk diimplementasikan dan digunakan dalam proses pembelajaran pada muatan Bahasa Indonesia.

ABSTRACT

There are limitations and a need for teacher ability to utilize technology to create innovative supporting teaching materials for students. The purpose of this research is to develop interactive learning multimedia. This type of research is development research with the ADDIE model. The subjects involved in this study were content experts, design experts, media experts, and trial students. Data were collected using the questionnaire and test methods, with assessment instruments in the form of learning achievement tests and test sheets for the validity of media products. The data obtained in the study were then analyzed using qualitative descriptive analysis techniques, quantitative descriptive, and t-test inferential statistical analysis. The results of this development research show that the design and development of interactive learning multimedia include five stages of the ADDIE model, product validity obtained from the review results of very well-qualified content experts (93.33%), very well-qualified design experts (93.75%), qualified media experts very good (93.33%), the results of the individual trials were very well qualified (93.66%), and the small group trials were very well qualified (92.56%), the results of the multimedia effectiveness test obtained an average pretest of 51.57 and an average of posttest 87.85. It was concluded that problem-based learning-based interactive multimedia is very qualified and feasible to implement and use in the Indonesian content learning process.

1. INTRODUCTION

Education is a means for humans to develop their potential through the learning process obtained at school (Pane & Dasopang, 2017; Sujana, 2019). In the learning process, the teacher is one of the important factors that support the success of the learning process (Musyafira & Hendriani, 2021; Rahmadani & Taufina, 2020). We can see the quality of education through several supporting factors, one of which is

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teaching resources. Along with the current development of globalization, educators are required to be able to adjust their abilities or skills to support the learning process (Rohman et al., 2021; Sari et al., 2021). By the nature of learning, students can improve the abilities, potential, knowledge, skills, and characteristics that exist within them. Improving students' abilities is inseparable from the supporting learning materials and media the teacher provides as a facilitator and teacher (Anjalina et al., 2019; Ridwan et al., 2023). Learning media is one of the innovations in the learning process, greatly increasing students' competence. Learning media mediates learning activities to increase effectiveness and efficiency in achieving educational goals (Geni et al., 2020; Umbara et al., 2020). They are learning media functions as an intermediary between teachers and students. Good media can help students learn something better and help them achieve learning objectives (Armansyah et al., 2019; Mella et al., 2022).

The reality shows that media application in the learning process is still relatively low. It aligns with the observations and interviews conducted with Mr. Ketut Askara, S.Pd as the homeroom teacher for the fifth grade at SD Negeri 1 Selat. The observations and interviews show that teachers still need to provide more innovative teaching materials to students in the learning process. It is caused by the need for teachers to utilize technology to support learning. Teachers only rely on textbooks and learning videos from YouTube, which are classified as less interactive, which makes students less active in class. So, it can affect the learning motivation and learning outcomes of students. In addition, it was found that some students were less careful in reading and had difficulties examining the text. The average score of fifth-grade students' midterm exam results on Indonesian language content was 69.2. It showed that as many as 44% of students were declared complete, while as many as 56% of students were declared incomplete because the scores obtained were below the minimum completeness criteria. The minimum completeness criterion that students must meet is 75. These results show that the lack of media use impacts low student learning outcomes. If left unchecked continuously, these problems will certainly impact not achieving learning objectives.

Efforts can be made to overcome these problems by maximizing media use in learning. One of the media that can be used is interactive multimedia. Learning multimedia is a computer-based interactive communication system presented integrated (Nugroho & Surjono, 2019; Yuniarni et al., 2019). Learning multimedia is one of the learning media that can be used to develop teaching and learning processes to be more interesting (Kuswanto & Walusfa, 2017; Sanuaka et al., 2017). Interactive multimedia is flexible because, in interactive learning multimedia, students can have complete freedom in controlling and determining the flow or course of learning in multimedia (Lauc et al., 2020; Septiani et al., 2020). The use of multimedia in the learning process has several advantages. It can increase students' learning motivation (Adi et al., 2021; Pratiwi & Wiarta, 2021). When students become more motivated to learn, of course, this can affect their learning outcomes for the better. Learning outcomes measure students' success in mastering the learning material that has been delivered. The application of interactive multimedia will be more effective if it is accompanied by the application of the Problem-Based Learning learning model, this is because this learning model can place students in the center or center of the learning process (Anjalina et al., 2019; Ramadani & Nana, 2020).

Problem-Based learning is a learning model whose learning process begins by presenting real or contextual problems that aim to develop the mindset of students to be higher, to be able to think critically, and to be able to solve the problems presented (Sari et al., 2021; Siagian et al., 2019). Problem-Based learning can also be interpreted as a learning approach that applies a learning system that confronts students with problems and then allows students to solve these problems and choose which answer is right to answer these problems (Liana et al., 2021; Umbara et al., 2020; Wedayanti & Wiarta, 2022). Several studies that have been conducted previously revealed that the problem-based learning model assisted by YouTube media can positively influence students' numeracy literacy skills (Ambarwati & Kurniasih, 2021). The results of other studies reveal that interactive multimedia effectively improve science learning outcomes, making it feasible to use in the learning process (Dwiqi et al., 2020). The results of further research reveal that interactive multimedia based on problem-based learning models is feasible to use in the fourth-grade mathematics learning process (Wedayanti & Wiarta, 2022).

Based on some of these research results, interactive multimedia, and problem-based learning models are effective for use in the learning process. In previous studies, no studies specifically discussed the development of interactive learning multimedia with problem-based learning for fifth-grade elementary school students. So this research is focused on this study to describe the design and validity of interactive learning multimedia for fifth-grade students.

2. METHOD

This research belongs to the development research developed using the ADDIE development model (analysis, design, development, implementation, and evaluation). The ADDIE model is developed systematically and is guided by the theoretical foundation of learning design. Applying the ADDIE model can minimize errors or deficiencies in the development process because all stages are covered through the evaluation stage (formative evaluation). The test subjects of this interactive learning multimedia development research were one learning content expert, one learning design expert, one learning media expert, three students for individual trials, and nine students for small group trials. Data collection methods used are questionnaires and tests. Questionnaires or questionnaires are a method of collecting data by submitting or providing a list of questions to research subjects. The test method is a data collection method that is carried out by giving students questions regarding the learning material included in the product that has been developed. It was done to measure the effectiveness of the developed interactive learning multimedia. Before implementing this interactive learning multimedia product for students, it is necessary to conduct a validity test to determine the feasibility of the product, which is carried out by experts (learning content experts, learning design experts, and learning media experts) and product trials on students (individual trials and small group trials). Learning content expert instruments are needed to determine the quality level of the content or learning materials included in this interactive learning multimedia product. The lattice of learning content expert instruments can be seen in Table 1.

Table 1. Instruments for Learning Content Experts

No	Aspect	Indicator	Item Number
1	Learning	1. Competency formulation	1, 2, 3, 4, 5
		2. The clarity of the program's identity	6, 7
		3. The clarity of the instructions for use	8
		4. The accuracy of the application of learning strategies	9
		5. Material suitability	10, 11, 12
		6. The clarity of the questions in the program	13, 14, 15, 16
2	Contents	1. Description of the material	1, 2, 3, 4, 5,
		2. Provision of examples	6, 7
		3. Provision of animation	8, 9, 19, 13
		4. The language used	11, 12
		5. Appropriateness of questions	14, 15, 16

Instructional design expert instruments are needed to determine the quality of the design applied to this interactive learning multimedia product so that the product's design can match the design aspects of the message. The lattice of learning design expert instruments can be seen in Table 2.

Table 2. Instructional Design Expert Instruments

No	Aspect	Indicator	Total Item
1	Objective	1. Clarity of learning objectives	1
2	Strategy	1. Learning activities that can motivate students	5
		2. Submission of material provides logical steps	
		3. Providing material in the media can help students remember the knowledge that has been given	
		4. The steps for using the media are clear	
		5. Submission of interesting material	
3	Evaluation	1. Use of material in the media	2
		2. Given an evaluation to measure the ability of students	

Learning media expert instruments are needed to determine the quality of interactive learning multimedia products that have been developed. The lattice of learning media expert instruments can be seen in Table 3.

Table 3. Learning Media Experts

No	Aspect	Indicator	Item Number	Total Item
1	Text Aspect	Text clarity (text readability), text presentation, text size, and type	1,2,3,4	4

No	Aspect	Indicator	Item Number	Total Item
2	Image Aspect	Image layout, quality, color balance, and image attractiveness	5,6,7,8,9	5
3	Animation Aspect	The quality, attractiveness, and suitability of the animation with the material presented	10,11,12	3
4	Audio Aspect	Clarity and suitability of the use of sound/music sound	13,14,15,16	4
5	Packaging Aspect	The attractiveness and suitability of the cover with the media content	17,18	2
6	Accessibility Aspect	Ease of use/access to learning multimedia and smooth interactive links	19,20	2
		Total		**20**

Individual and group trial instruments are used to measure multimedia quality in the learning process, which can be seen through three aspects: learning, material, and display. The instrument is also useful for knowing the response or feedback from students after using this interactive learning multimedia. The individual and small-group trial instrument grids can be seen in Table 4.

Table 4. Individual and Small Group Trials

No	Aspect	Indicator	Item Number
1	Learning	1. Ease of selecting menu items	1
		2. Freedom to choose the serving menu	2
		3. Clarity of program title	3
		4. Clarity of competency formulation	4
		5. Clarity of study instructions	5
		6. Ease of exiting the program	6
2	Material	1. Clarity of content	1
		2. Ease of material to understand	2
		3. The attractiveness of the material	3
		4. Clarity of language used	4
		5. Clarity of instructions for working on questions	5
3	Appearance	1. Ease of reading text	1
		2. Interesting color combinations	2
		3. The attractiveness of the image/animation	3
		4. The attractiveness of the button	4
		5. Appealing background music	5

After going through the stages of preparing the instrument, the next step is to review by the instrument expert to determine whether the instrument items are relevant to the interactive learning multimedia being developed. Furthermore, the data analysis techniques used in this development research are descriptive qualitative analysis techniques, quantitative descriptive analysis, and t-test inferential statistics. The qualitative descriptive analysis technique systematically processes data in sentences, words, and categories related to an object so that the final result is a general conclusion. This data analysis technique is used on data in the form of suggestions, responses, and comments by learning content experts, learning design experts, and learning media experts, students in individual and small group trials. Quantitative descriptive analysis is a data processing technique systematically using numbers to obtain general conclusions. The t-test analysis is useful for testing differences in the calculated mean values between two groups of correlated and independent samples. The references for determining the meaning and decision-making decisions to be used are presented in Table 5.

Table 5. Conversion of Achievement Levels with a Scale of 5

Achievement Level (%)	Qualification	Description
90-100	Very good	No need to revise
80-89	Good	Slightly revised
65-79	Enough	Adequately revised
40-64	Not enough	Many things were revised

0-39	Very less	Repeated product creation

To find out the effectiveness of the developed interactive learning multimedia, it is necessary to test the effectiveness. The effectiveness test is carried out through a pretest and posttest. The pretest and posttest results will be processed using the t-test inferential statistical analysis technique. The pretest and posttest instrument grids are presented in Table 6.

Table 6. Pretest and Posttest Instruments

Basic competencies	Indicator	Cognitive Level
3.8 Exploring important information from historical narrative texts presented orally and in writing using the aspects of what, where, when, who, why, and how.	3.5.1 Relating the image to the colonial events experienced by the Indonesian nation using the aspects of what, where, when, who, why, and how.	C6
	3.5.2 Identify important information from historical narrative videos regarding the background of the arrival of European nations in Indonesia using the aspects: what, where, when, who, why, and how	C1
	3.5.3 Analyzing the reading text "The Event of the Coming of the West" using the aspects: what, where, when, who, why, and how.	C4
4.5 Present important information from historical narrative texts using the aspects of what, where, when, who, why, and how, as well as standard vocabulary and effective sentences.	4.5.1 Give opinions about historical narrative texts that use what, where, when, who, why, and how.	C5
	4.5.2 Presenting the results of the discussion on test reviews which explain the content and information of a text using the aspects: what, where, when, who, why, and how, as well as standard vocabulary and effective sentences.	C6

3. RESULT AND DISCUSSION

Result

The presentation of the research results will be divided into three parts, describing the design and development of interactive learning multimedia, the validity of developing interactive learning multimedia, and the effectiveness of developing interactive learning multimedia on Indonesian content in fifth grade at SDN 1 Selat. The design and development of this interactive learning multimedia use the ADDIE development model. The ADDIE model includes five stages: analysis, development, design, implementation, and evaluation. The ADDIE model has a fairly flexible and systematic nature so that developers can minimize any errors that occur by implementing this model. In the first stage, the analysis stage, a needs analysis is carried out, which consists of an analysis of student characteristics, competency analysis, and an analysis of school infrastructure. In the analysis of the characteristics of students that as many as 56% of students have learning outcomes below the minimum completeness criteria because the material studied is too deep and delivered using the lecture method, as well as the lack of use of technology to create interactive digital teaching materials to support learning. Then, in the competency analysis, after carrying out an analysis related to the problems faced by students in related learning content, the results of discussions and selection with class teachers used material on theme 7 sub-theme 1 with Indonesian language content. Meanwhile, in the analysis of school facilities and infrastructure, it was found that there were learning support facilities that could be utilized, with proper and adequate conditions, such as LCD projectors, WiFi, speakers, laptops, and power sources.

The second stage of design, At the design stage, the developer begins to enter the stage of designing interactive learning multimedia, the stages that are passed include choosing software. The developer uses Construct 2 as the main software for this interactive learning multimedia. Designing flowcharts and storyboards using flowcharts here is intended to provide an overview of the system's flow for using this interactive learning multimedia. To compile an assessment instrument therefore, an assessment instrument is needed to assess this interactive learning multimedia. The instrument is a questionnaire used by learning media experts, learning design experts, learning content experts, and students in individual and small-group trials.

The third stage is development. At the development stage, the developer has entered the production stage of this interactive learning multimedia, which was previously designed at the design stage. In the development process, there are three stages in it, the product creation process, review and validation,

and revision. The first stage in making a product is to look for materials through relevant thematic books and sources from the internet. Later, the material we get will be inputted into the media. In addition, all components used in compiling this media, such as text, images, audio, video, and animated characters, will be combined into one unified whole in this interactive learning multimedia product. To combine all these components, the developer uses the main software, Construct 2, assisted by other supporting software to make these components, such as CanvaPro, Filmora, and Audacity. The fourth stage is implementation. In the implementation stage, the trial phase is carried out real and limited to students at school. The implementation phase is carried out after reviewing all product revisions on product validity in the previous stage. This stage includes collecting data on student learning outcomes through an effectiveness test using the pretest and posttest. The purpose of implementing the product for students is to determine the effectiveness of learning outcomes after using this interactive learning multimedia product.

The fifth stage is evaluation. In practice, the formative evaluation stage is carried out through validity testing by experts, individual trials, and small group trials. The purpose of the validity test is to find out the results of reviews and assessments of the products that have been developed. Then, at the summative evaluation stage, it is carried out through an effectiveness test by students. The effectiveness test includes a pretest and a posttest. The effectiveness test is carried out to determine the effectiveness of interactive multimedia development in the learning process. It can be seen from students' learning outcomes before and after using interactive multimedia. The validity of interactive learning multimedia is carried out through expert tests and product trials to determine the validity and feasibility of these products for use in the learning process in the classroom on related lesson content. The validity results are presented in Table 7.

Table 7. The Results of the Validity of Interactive Learning Multimedia

No	Trial Subjects	Validity Results (%)	Description
1	Learning Content Expert Test	93,33	Very good
2	Learning Design Expert Test	93,75	Very good
3	Learning Media Expert Test	93,33	Very good
4	Individual Trial	93,66	Very good
5	Small Group Trial	92,56	Very good

The validity of the development results was obtained through learning media expert trials, instructional design expert trials, learning content expert trials, individual trials, and small group trials using the questionnaire data collection method. The media expert trial validation results obtained a score of 93.33% with very good qualifications. The design expert trial validation results obtained a score of 93.75% with very good qualifications. The content expert trial validation results obtained a score of 93.33% with very good qualifications. The individual trial validation results obtained a score of 93.66% with very good qualifications. Then finally, the results of the small group trial validation obtained a score of 92.56% with very good qualifications.

Based on the results of the validity above, it can be concluded that these interactive learning multimedia is declared feasible to be used in the learning process of Indonesian language content. Input, suggestions, and comments provided by learning content experts, learning design experts, and learning media experts are considered to improve the developed interactive learning multimedia products. Learning content experts revealed that the media developed was very good and interactive and helped teachers learn. The product loading process took quite a long time. Furthermore, improvements were made to perfect this interactive learning multimedia in the design aspect based on the suggestions and comments given by learning design experts. The suggestions and comments given by learning design experts and product revisions made are presented in Table 8.

Table 8. Suggestions, Comments, and Product Improvements of Learning Design Experts

No	Suggestion	Revision Results
1	On the main menu, the theme title is enlarged	The size of the theme title has been enlarged from its original size.
2	Profile completed again	The developer's profile page has been re-equipped with the developer's identity and the supervisor's name.
3	The word clove plant is replaced with clove flower	The sentence and a picture of the clove flower have been revised.
4	Exercise is replaced with an evaluation or quiz.	The sentence on the practice button in the main menu has been revised to become an "evaluate" button.

Based on the suggestions and comments given by learning media experts, improvements have been made to perfect this interactive learning multimedia. The suggestions and comments given by learning media experts and product revisions made are presented in Table 9.

Table 9. Suggestions, Comments, and Improvements to Learning Media Experts

No	Suggestions and Comments	Revision Results
1	Add voice/narration at each presentation or start of material	It has been added at the beginning of each material to provide an introductory word on each material slide. The sound or narration is made short and in the form of a loop or always appears automatically at the start of each slide being played.
2	Change the competency button to match the shape of the material, evaluation, and story button design.	It has been changed according to the design and shape of the other buttons on the main menu.
3	Add exercises that students can answer directly, for example, word-matching questions.	It has been added to the slide after the last presentation of the material.

After going through the validity test and all the revisions given, the results of the development of interactive learning multimedia in this development research are presented in Figure 1, Figure 2, Figure 3, and Figure 4.

Figure 1. Intro Page

Figure 2. Main Menu page

Figure 3. Material page

Figure 4. Evaluation page

The results of testing the effectiveness of this interactive learning multimedia for students through the pretest and posttest obtained tcount = 12.801 and ttable = 2.000. So it can be concluded that tcount > ttable so that H0 is rejected and H1 is accepted. That is, there is a significant difference in the learning outcomes of students in the Indonesian language content before and after using interactive learning multimedia. So, this interactive learning multimedia is effective because it can improve student learning outcomes. The results of the t-test data analysis are presented in Table 10.

Table 10. Results of T-Test Data Analysis

Data	N	Average	S^2 (variance)	Db (n_1+n_2-2)	T_{count}	t_{table}
Pretest	28	51,57	58,47	54	12,801	2,000
Posttest		87,85	29,01	54		

Discussion

Based on the validity test results data obtained, this interactive learning multimedia is classified as excellent qualification according to the assessment of experts and trials by students. All validity results also state that these multimedia is appropriate for use by students in the process of learning Indonesian content. This interactive learning multimedia use the ADDIE development model so that in the development process, it can minimize any errors or deficiencies that arise (Almelhi, 2021; Arifin et al., 2018; Soesilo & Munthe, 2020). In addition, the ADDIE model also allows developers to evaluate each product development process to produce a feasible and effective product (Pitriani et al., 2021; Sugihartini & Yudiana, 2018). Therefore, the result of this development process, the product produced is by the characteristics of students as users and is effective in improving student learning outcomes. Validity testing is a stage or process of evaluating a product being developed to determine whether the product is valid or not (Tirtayani & Pratiwi, 2021; Yama et al., 2018). Subject validity tests were carried out by learning content experts, instructional design experts, and learning media experts, and trials by students (individuals and small groups). It shows that summative evaluation needs to be done through expert review. The results of the reviews and assessments given by learning content experts to the products developed (interactive learning multimedia) are very well qualified. Based on the results of validity testing by experts, several findings were found in this study, including:

The first finding relates to the learning content expert's assessment process, which consists of twelve assessment indicators, eight indicators score very well, and four indicators score well. Factors that influence obtaining very good qualifications on each indicator by content experts are the suitability of the material content presented with the formulation of basic competencies and learning objectives, the use of language that is clear and by the language of student communication, the suitability of the evaluation items used with the material and objectives learning, and giving examples and animation illustrations on language material is very appropriate and able to make it easier for students to understand the material. It shows that learning media must focus on students' learning objectives, indicators, and basic competencies (Firdaus et al., 2020; Muchtar et al., 2021). In addition, there are several principles for evaluating a learning media that need to be considered, including the media must be by the learning objectives to be achieved, the use of vocabulary, the suitability of the content of the material, the suitability of the characteristics of students, and the quality of the images or visuals used (Donna et al., 2021; Nuraini et al., 2021). Therefore, it can be concluded that the suitability of basic competencies, indicators, learning objectives with the content/content of the material, use of language/vocabulary, as well as evaluation items used in this learning multimedia can provide benefits for teachers and students to use in the learning process. Learning to provide positive output for student learning outcomes and objectives can be achieved (Arina et al., 2020; Nata & Putra, 2021).

The second finding refers to the results of reviews and assessments that learning design experts have given regarding this interactive learning multimedia that obtained results with very good qualifications. In the instructional design expert assessment questionnaire, eleven indicators obtained scores with very good qualifications, while as many as five obtained scores with good qualifications. It is caused by several important points contained, the clarity and suitability of the material with basic competencies and learning objectives, the clarity of the steps for using the media, the determination of using colors, the use of letters, the layout of buttons and images, the suitability of evaluations with the material in interactive learning multimedia, and content in interactive learning multimedia can attract students' learning motivation. An attractive presentation in a media is related to aspects of color, music, and animated graphics, which can give the impression of realism, and can help students who are less responsive in understanding learning material to increase students' learning motivation (Hanikah et al., 2022; Sintya et al., 2020; Wardani et al., 2021).

The third finding relates to the results of reviews and assessments given by media experts regarding interactive learning multimedia that has been developed to get results with very good qualifications. In the media expert assessment questionnaire, with a total of fifteen indicators, ten indicators got very good scores, and five other indicators got good scores. It is caused by several important points contained, clarity, readability, suitability of presentation, type and size of text used, the balance of quality and color in illustration images, the attractiveness of interactive learning multimedia covers, clarity of narrative or sound used, suitability of animation and the attractiveness of the animation used and the ease of use and the clarity of the instructions for use. Elements contained in media such as animation and video can help students to obtain more detailed information so that the capacity to be stored in brain memory can increase (Adi et al., 2021; Pratiwi & Wiarta, 2021). In addition, the application of animation to interactive learning multimedia can help students learn more effectively by facilitating cognitive processes (Nugroho & Surjono, 2019; Yuniarni et al., 2019). Combining audio-visual concepts, design components, graphics, and interesting and interactive content for students, can stimulate the mindset of students in the learning

process, which will have a positive impact on their learning outcomes (Geni et al., 2020; Kuswanto & Walusfa, 2017; Sanuaka et al., 2017; Umbara et al., 2020). Looking at the results of individual and small group trials conducted by students, the results showed very good qualifications. It is proven by the scores obtained in the trial, 93.66% and 92.56%. At the same time, the statements given by students that the application of interactive learning multimedia is a good and interesting idea because it can increase students' learning motivation. It also follows the aspects and indicators included in the assessment questionnaire for individual and small-group trials.

The fourth finding relates to the results of the effectiveness test on interactive learning multimedia, which states that these learning multimedia is effectively used in the learning process of students in Indonesian content because there is a significant difference in student learning outcomes in Indonesian content between before and after the use of interactive learning multimedia. The results obtained in this study align with previous research results, which also revealed that the problem-based learning model assisted by YouTube media could positively influence students' numeracy literacy skills (Ambarwati & Kurniasih, 2021). The results of other studies reveal that interactive multimedia effectively improve science learning outcomes, making it feasible to use in the learning process (Dwiqi et al., 2020). The results of further research reveal that interactive multimedia based on problem-based learning models is feasible to use in the fourth-grade mathematics learning process (Wedayanti & Wiarta, 2022). Based on some research analysis results supported by previous research, interactive multimedia, and problem-based learning models are effective for learning.

4. CONCLUSION

Based on the presentation of the results and discussion above, problem-based learning interactive multimedia is very qualified and feasible to be implemented and used in the learning process on Indonesian language content. These interactive learning multimedia was also stated to be effective based on the t-test analysis conducted that applying this multimedia could significantly improve student learning outcomes in Indonesian content.

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