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The development of genially-based interactive learning multimedia for elementary school students

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ABSTRACT

This research focuses on producing genially-based interactive multimedia learning for fifth-grade elementary/MI students. This research belongs to the type of research and development research and development (RND). The procedure for developing genially-based interactive learning multimedia uses a development model developed by Sugiyono with ten stages, namely potential and problems, data collection, product design, design validation, product revision, initial trial, product revision, usage trial, product revision, and mass production. However, in the current state of the COVID-19 pandemic and the limited time, conditions, and costs, researchers only carried out these stages, only to stage 9, namely product revision. The results of the validation by media experts with a score of 71 in the good category, material experts with a score of 86.6 in the very good category, and learning experts with a score of 80 in the very good category, so that genially-based interactive learning multimedia is feasible to use. The results of the responses of the SD Muhammadiyah Karangkajen II class teachers in the initial trial, namely by obtaining a score of 82.2 with a very good category, then the results of the responses of the students of SD Muhammadiyah Karangkajen II in the initial trial with the subject of 4 students with a score of 90 in the very good category, while the response of students in the use trial with the subject of 19 students with a score of 95.2 with a very good category. Then the average value of student responses is 92.6. Based on the results of teacher and student responses, genially based interactive multimedia learning is feasible to use.

Introduction

Information and Communication Technology (ICT) is a component that is growing rapidly in scientific progress. Therefore, encouraging efforts to utilize the results of technological innovation in learning will increase learning motivation. The rapid development of information technology in the current era of globalization cannot be avoided, its influence on the world of education cannot be avoided. Global demands require the world of education to always adapt

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technological developments to efforts to improve the quality of education, especially adjusting the use of information and communication technology for the world of education, especially in the learning process (Agustian & Salsabila, 2021) . Technology is known to have an important role in the development of education and various sectors until the 21st century (Wijaya et al., 2020). From year to year, science and technology have experienced very astonishing developments (Laksana, 2021). This development is not only felt in the fields of technology and information, but also in other fields such as industry and science. Educational technology is an applied scientific discipline, which develops due to field needs or learning needs. It is hoped that the application of educational technology in learning process activities can be effective, efficient and more meaningful for students (Widiyono & Millati, 2021).

The use of technology in the era of globalization is nothing new. As the birthplace of technology, it is only natural that technology is used to facilitate the application of learning in the realm of education (Lestari, 2018). Learning technology is all technology used by teachers to increase the efficiency of the teaching and learning process (Yaumi, 2018). The rapid pace of modern life and technological advances make it easier for people to organize and display knowledge and involve students in the teaching and learning process (Putra, 2015). The use of media in education can increase motivation and stimulate learning activities, attract new interest, and even have a psychological impact on the younger generation. Seeing this, technological advances can be said to encourage various changes, one of which is in the field of education. In addition, changes in the learning environment and expected learning outcomes are caused by advances in information technology. The aim of this research is to determine the steps, quality, responses of educators and students to genial-based learning media for fifth grade SD students.

There have been significant changes caused by the Covid-19 Pandemic, especially in the education sector. As a result, all levels of education, including elementary schools (SD), must immediately change to accommodate learning from home using online learning resources. Some argue that the Covid-19 pandemic provides an opportunity for the education sector to apply technology that is in line with industry 4.0 (Zainuddin,Atsani, 2020). Apart from that, many educators still have difficulty making the most of learning materials for online teaching. During the COVID-19 pandemic, teachers faced challenges in implementing the online learning process, including students' inability to understand learning material due to the absence of face-to-face learning process activities. Teachers also find it difficult to monitor student learning progress (Ufliasari et al., 2021). Based on the explanation above, it can be said that the learning process during the Covid-19 pandemic caused many problems, because these problems placed quite a large burden on all Indonesian society, especially in the school sector.

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In the era of online learning, educators must also be creative and original in delivering content through learning media. Therefore, it is hoped that educators can optimize technology in the learning process, and utilize technology as a learning medium. A digital native is someone born in the period of digital computer technology and applications such as the Internet, video games, text messaging, and email. The digital native generation finds it easier and more active to use technological devices, apart from that, digital natives are the generation that grew up and grew up in the world of digital technology (Sukirman, 2017). Therefore, today's children are a digital native generation who are very proficient with technology such as smartphones.

Characteristics of learners or the digital native generation include preferring media in the form of images, sound and video compared to text, preferring feedback in the form of rewards, preferring group work (Vivianti, 2017). Therefore, because the character of students or the digital native generation is very different from previous generations, a new approach is needed. Based on the description above, it can be said that technological progress, especially in the field of education, is very rapid and has various impacts on society, especially students or the digital native generation. The development of science and technology then spread to the field of education. This is related to multimedia-based learning, namely creating learning media that is interactive and reflects students' curiosity (Sutarno et al., 2015). The role of media in the learning process is as an intermediary or introduction between the source of the message and the recipient of the message, stimulating thoughts, emotions, attention and motivation to learn so that they are involved in the process. Learning Media itself has the meaning of a tool that helps the teaching and learning process so that the message is conveyed more clearly and educational goals can be achieved effectively and efficiently (Miasari et al., 2022).

Apart from that, learning media is a teaching tool for teachers to deliver teaching materials, increase student creativity and increase student attention in the learning process (Firmadani, 2020). In essence, the learning process functions as a channel for messages and data related to learning. Well-designed educational media will really help students achieve their learning goals. Therefore, learning media plays an important role in the learning process (Junaidi, 2019). Learning media functions as a student learning resource to obtain messages and information from teachers so that learning material can be further improved and shape student knowledge (Nurrita, 2018). Learning media can help the process of learning activities which aim to clarify the delivery of the meaning of learning so that learning objectives can be conveyed more perfectly and well (Kustandi, C., & Darmawan, 2020). Media is any physical tool that can present messages and stimulate students to learn (Kompri,2017:83). During the Covid-19 pandemic, the learning process is carried out online; Therefore, teachers can choose

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effective and efficient learning media as a tool to help students learn at home so that teachers do not deviate from their responsibilities as providers of information and processes. Learning is carried out without difficulty. Therefore, with interactive multimedia learning, it is hoped that students can think critically and not get bored throughout the learning process, so that the current learning can be carried out effectively and in accordance with the initial objectives (Surjono, 2017).

So that students can study independently at home, the online learning environment during the COVID-19 pandemic requires multimedia or interactive media that can be accessed via the internet. One of the multimedia or media available is genially. Quoted from High Teacher Indonesia, Genially is a very powerful platform for creating interactive learning experiences. Apart from that, through Genially, educators can develop presentation content, infographics, animated and video presentations, ePosters, CVs, Quizzes and Gamification. In accordance with the needs and characteristics of today's digital native students. Therefore, it can be concluded that genially based interactive learning multimedia is very much needed in the current online learning process. Multimedia is the use of computer technology to process and present and combine text, sound, image, animation, audio and video file types with tools and connections so that users can navigate, interact, create and communicate (Limbong, 2020:3). According to a secondary school teacher in Indonesia, Genially offers a powerful platform for developing interactive learning experiences. Educators can also create presentation content, infographics, animated and video presentations, ePosters, CVs, quizzes, and gamification using genially (Aditya, 2021). In accordance with the qualities and needs of today's digital native learners. Genially is an online learning media that can help teachers create creative and innovative teaching materials in the form of presentation materials, games, learning videos and others (Enstein et al., 2022).

Based on the findings of an interview conducted on October 18 2021 with the fifth grade teacher at SD Muhammadiyah Karangkajen II, it shows that the learning technique used is Student Center Learning which places students in the position of learning subjects. With this method, it is hoped that students can learn actively, independently, and apply and understand the material according to their talents. However, this form of learning is less effective and efficient during the current Covid-19 pandemic. The reason is, based on interview findings, there are still many students who do not understand the material and teachers lack understanding regarding the appropriate use of learning media in the current era of online learning. Apart from that, teachers are only able to provide limited media such as PPT media and learning videos, and use platforms as learning tools such as Whatsapp groups, Google Classroom, Google Forms, Zoom Meetings and Google Meet, but have not utilized them.

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multimedia learning specifically for thematic learning. Then, the homeroom teacher for class V stated that there were no learning resources in the form of interactive multimedia learning that centered on thematic learning based on a pleasant atmosphere. Based on the results of interviews with 23 students conducted via Google Form, students who use smartphones or mobile devices for online learning often feel bored and distracted, preferring to play games and use social media such as Tiktok, YouTube and Instagram. Many students are bored and don't pay attention to the learning process because the learning process is monotonous, such as giving material and assignments via WhatsApp groups without listening to the teacher's explanation of the material directly and using monotonous learning videos. Therefore, interesting learning media is needed. So smartphone use is not limited to social networks, games, etc.

Based on the results of an interview on December 20 2021 with the fifth grade teacher at SD Muhammadiyah Karangkajen II regarding the learning outcomes of thematic learning. That in the daily test scores on themes 1,2,3,4 and 5 in class V of SD Muhammadiyah Karangkajen II there are still those who have not reached the minimum completeness criteria (KKM). Minimum KKM is 70, below average. In theme 1 there is 1 student (with a score of 60), theme 2 there are 4 students (with a score of 60, 50, 60, 65), theme 3 is 1 student (with a score of 55), theme 4 as many as 1 student (with a score of 67), and theme 5 as many as 11 students (with scores 69, 62, 62, 60, 69, 46, 62, 54, 54, 69, 54). Therefore, the researcher wants to develop genially based interactive multimedia learning on the next theme, namely theme 6, subtheme 1 learning 2 with the title hot theme and its transfer. Based on the description above, updates to learning media are really needed in the world of education, especially during the COVID-19 pandemic. This research seeks to enable researchers to overcome existing problems by carrying out "Development of Genially Based Interactive Learning Multimedia for Class V SD/MI Students". Apart from that, multimedia developed by researchers can help teachers and students in the learning process, as well as being an effort to use technology in the learning process. This is in line with Ki Hajar Dewantara's thoughts "Guide students according to their nature and times" (Cucu Suryana, 2022).

Method

The type of research used in this research is Research and Development (RND) development research with a development model developed by Sugiyono (Efanda & Fatmawati, 2018), see Fig. 1. In this development model, there are ten stages, but this research only uses the ninth stage, due to time, conditions, and cost limitations. In this research, the product produced is a genially based interactive multimedia learning to support the thematic

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learning process for theme 6 subtheme 1 learning 2 for class V elementary school.

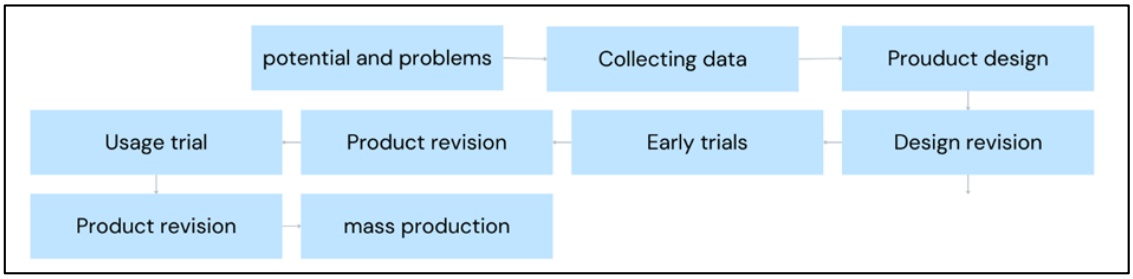

Fig 1. Research steps developed by Sugiyono (Efanda & Fatmawati, 2018)

The types of data used in research on developing genially based interactive multimedia learning are quantitative data and qualitative data. Qualitative data regarding the assessment of genially based interactive multimedia learning in the form of input, responses, comments and suggestions from validation experts and teachers are used to revise the products being developed. Genially-based interactive multimedia learning quantitative data is from the results of product feasibility tests obtained from the number of assessments by expert lecturers, teachers, and students in the form of scores and categorized into certain categories. The data collection instruments used in this research are observation sheets for expert lecturers which consist of research instrument validation sheets, validation sheets by media experts, materials, learning, as well as teacher and student assessment sheets. The validation sheet in this study was prepared and developed with 5 alternative answers (Likert scale), namely very good (5), good (4), sufficient (3), poor (2), and very poor (1). This assessment scale is for expert lecturer validation sheets and teacher assessment sheets, see Table 1.

Table.1 Rating Scale

Category	***Score***
Very good	5
Good	4
Pretty good	3
Not enough	2
Very less	1

Meanwhile, the student assessment sheet uses the Guttman scale with 2 alternative answers, namely Yes (1), and No (0) (Sugiyono, 2019), see Table 2.

Table.2 Guttman Rating

Information	***Score***
Yes	1
No	0

Results and Discussion

The development of genially based interactive learning multimedia on thematic learning theme 6 subthemes 1 learning 2 for fifth-grade elementary school students has been tested

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through several steps. Product trials were carried out on expert lecturers who were competent in their fields. Product assessments are carried out by media experts, material experts, and learning experts. Apart from that, this genially based interactive learning multimedia also received teacher and student assessment responses. Product development in the form of genially based interactive learning multimedia was carried out through several development steps. The development stage was carried out using a model developed by Sugiyono with 10 stages, namely potential and problems, data collection, product design, design validation, product revision, initial trials, product revisions, use trials, product revisions, and mass production. However, due to limited time, conditions and costs, researchers only carried out these stages up to stage 9, namely product revision. The first development steps are potential and problems. At this stage, observations were made of class V students at SD Muhammadiyah Karangkajen II during learning, analyzing the needs for teaching materials, materials, and characteristics of class V students at SD Muhammadiyah Karangajen II in an effort to identify potential and problems.

The second stage is collecting data to obtain information. The results of the information collection will be used as a source for product planning, and it is hoped that it can solve existing problems. In this step, the researcher uses the following three methods: (1) interviews: this is done before the research is carried out because it functions as a tool to analyze the needs of students at school. Regarding the accessibility of learning resources used in the teaching and learning process in online and face-to-face learning, interviews were conducted with class teachers; (2) List of questions: This survey was completed before the research was carried out to determine the needs of students at the institution. This questionnaire was given to fifth grade students at SD Muhammadiyah Karangkajen II to fill in regarding the accessibility of learning resources used in learning during this online learning period as well as any challenges or obstacles faced during this online learning period; (3) Literature Review: This activity was carried out in the context of Look for theoretical references that are relevant to the research that the researcher will carry out. During an interview with the fifth grade teacher at Muhammaddiyah Karangkajen Elementary School on October 18 2021, the researcher proved that in fifth grade at Muhammaddiyah Karangkaejn II Elementary School there was no media used in the form of Genially Based Interactive Learning Multimedia.

The third stage is product design. product design, researchers build genially-based learning multimedia which is produced using a genially account via the genially website www.genially.com. The product to be developed is genially based interactive multimedia learning for class V elementary school on thematic learning theme 6 heat and its transfer subtheme 1 temperature and heat learning 2. When designing a product, start by making a

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flowchart, storyboard, collecting design objects and so on so on first. After that, create a product on the genially website www.genially.com.

The fourth stage is design validation. Validation of genially based interactive learning multimedia was created by researchers to facilitate thematic learning for class V SD by media experts, material experts and learning experts, as well as appropriate reactions from educators or students. Media expert validation resulted in an overall score of 71 with the "Good" category for data validation. Based on these criteria, it can be determined that interactive learning multimedia is suitable for use in the educational sector. Material expert validation resulted in an overall score of 86.6 for data validation in the "Very Good" category. Based on these criteria, it can be determined that interactive learning multimedia is suitable for use in the educational sector. Learning expert validation resulted in an overall score of 80 with the "Good" category for data validation. Based on these criteria, it can be determined that interactive learning multimedia is suitable for use in the educational sector. Meanwhile, to calculate the validation assessment of expert lecturers, it refers to the Likert scale (Kurniasih, 2021:45). Based on these criteria, it can be concluded that the use of genially based interactive multimedia learning is suitable to be used to support the thematic learning process for theme 6, subtheme 1, learning 2, which can be seen in Table 3.

Table.3 Data from Expert Validation Assessment Results

No.	*Evaluation*	*Score*	*Category*
1	Media Expert	79	Good
2	Materials Expert	82,2	Very Good
3	Learning Expert	92,6	Very Good
	Amount	253,8	
	Score	84,6	
	Category	Very Good	

The fifth stage is design revision. At this stage the researcher revised the product after the product created by the researcher had been validated and received input from experts, material experts and learning experts regarding the shortcomings of genially based interactive learning multimedia. Researchers have made improvements to minimize weaknesses and optimize genially based interactive learning multimedia so that it can be used optimally according to input and suggestions from experts. The suggestions given by media experts are; (1) It would be nice to add elements of background music; (2) In the instructions, add an explanation of how to use the media/multimedia; (3) In quizzes, it would be nice if the answers appeared at the end except for practice questions.

Then the suggestions given by material experts are: (1) For writing Indra is corrected to Indera; (2) In the section on the difference between heat and temperature, precisely in temperature, the statement is added that temperature is a quantity in physics; (3) In the table

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of differences between heat and temperature, a picture of a calorimeter and a thermometer is added so that students can understand the difference more clearly; (4) In the let's try activity, there is an activity to make or experiment in making a simple thermometer, adding a picture of a thermometer that uses water to make it more interesting and for students to understand better. Apart from that, the suggestions given by learning experts are: (1) Add indicators for each lesson content to a minimum KD of Knowledge of 3; (2) Create indicators according to KKO Starting from a low level. for example levels 1, 2 and 3; (3) Learning objectives must be in accordance with the number of indicators; (4) The Learning Materials section of the RPP must explain what material will be studied, not what media will discuss the material. In the sixth stage, namely initial trials. The initial trial phase was carried out in class V of SD Muhammadiyah Karangkajen II, with the number of subjects being 4 students and class V teachers of SD Muhammadiyah Karangkajen II. Trials were carried out to determine the responses of students and teachers to the feasibility of genially based interactive multimedia learning. The teacher assessment results obtained a score of 82.2 in the "Very Good" category. Meanwhile, the results of the initial trial on class V students at SD Muhammadiyah Karangkajen II with a total of 4 people obtained an average score of 90 in the "Very Good" category can be seen in Table 4.

Table.4 Initial Trial Results Data

No.	***Responded***	***Score***	***Category***
1.	4 Students (100, 100, 90, 70)	90	Very Good
2.	Class V Teacher	82,2	Very Good
	Amount	172,2	
	Score	86,1	
	Category	Very Good	

The seventh stage is product revision. After the initial trial implementation is complete, the media needs to be improved on the genially based interactive learning multimedia product developed by the researcher. Product revisions were carried out to obtain appropriate and good media to use when learning on Theme 6 Heat and its Transfer Subtheme 1 Temperature and Heat Learning 2 so that it can create a fun and effective learning process. Improvements to genially based interactive learning multimedia products are located in the text in the material menu, paying more attention to the distance and size of the text. After product revision, researchers will conduct usage trials. The eighth stage is trial use. In this trial, the number of subjects was 19 people. The trial phase for use was carried out in class V of SD Muhammadiyah Karangkajen II. Usage trials were carried out to determine students' responses to the feasibility of genially-based interactive learning multimedia. The use trial was carried out in class V of SD Muhammadiyah Karangkajen II. The number of students in the trial used was 19 people who obtained an average score of 95.2 in the "Very Good" category, which can be seen in Table 5.

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Table.5 Data on Initial Trial Results for Use

No.	*Responded*	*Score*	*Category*
1.	ABA	100	Very Good
2.	ASN	100	Very Good
3.	IMG	100	Very Good
4.	MWS	100	Very Good
5.	MDAD	100	Very Good
6.	MRFS	90	Very Good
7.	PAA	100	Very Good
8.	RAK	70	Good
9.	RDAM	100	Very Good
10.	AAI	100	Very Good
11.	AAA	100	Very Good
12.	FJF	100	Very Good
13.	KRD	100	Very Good
14.	KAP	100	Very Good
15	NZDW	90	Very Good
16.	RATD	100	Very Good
17.	VKH	100	Very Good
18.	ZJM	70	Good
19.	ZMK	100	Very Good
Amount		1810	
Score		95,2	
Category		Very Good	

The ninth stage is product revision. After testing the use and receiving responses from respondents, the product or media is then revised to perfect the product. This improvement or revision is carried out if, during the trial use, deficiencies or weaknesses are found in the interactive learning multimedia being developed. This improvement is the final stage in this development research. At this stage, researchers only refine it to make it more effective by paying attention to each component in the multimedia. In the tenth stage, namely mass production. Mass production is the final stage of Sugiyono's product development process. However, this development research did not carry out mass production because the learning media produced was genial-based interactive multimedia learning. Additionally, limited resources prevent the mass production of learning materials that have been created. Based on the explanation above, Genially-based interactive multimedia obtained validation results from media experts who obtained a score of 71, material experts obtained a score of 86.6, and learning experts obtained a score of 80. The validation results show that the Genially-based interactive multimedia learning that was made is feasible and interactive to be applied in the process. learning, especially in thematic learning. Meanwhile, the results of assessing the feasibility of educators' and students' responses to genially based interactive multimedia learning at SD Muhammadiyah Karangkajen II by conducting initial trials on class teachers got a score of 82.2 and students with 4 subjects got a score of 90, as well as trials of use on participating students with a total of 19 subjects with an average score of 95.2. Based on the

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evaluation of teacher and student answers, it can be determined that the use of genially based interactive multimedia learning to support the learning process in thematic learning topic 6 subtheme 1 learning 2 is suitable for use, as can be seen in Table 6.

Table.6 Genially Based Interactive Multimedia Quality Results Data

No.	***Evaluation***	***Score***	***Category***
1	Expert Validation	79	Good
2	Initial Trial	86,1	Very Good
3	Trial Use	95,2	Very Good
Amount		260,3	
Score		86,76	
Category		Very Good	

Based on the assessment results that have been described, it can be seen that the multimedia designed by researchers is very suitable for elementary school students. The quality and capacity of each media must be evaluated by the instructor so that they can choose the media that best suits their conditions and needs (Maimunah, 2016) . Apart from that, a media may only be suitable for use in certain circumstances (Ulfa, 2020). Therefore, a teacher must choose media to use in the learning process. A teacher must understand and consider general criteria in selecting media. Based on the opinion above, it can be concluded that in order for a teacher to choose the right learning media, he must have knowledge about the purpose of using the media. The use of media must also be evaluated for its effectiveness in teaching and learning activities that will be implemented and adjusted to student characteristics. So that you can achieve learning goals effectively. Genially-based interactive learning multimedia is one of the media that can function as an intermediary to help students understand the lesson material so that teachers can more easily present the content and students can more easily understand the lesson material.

Utilizing appropriate media in the learning process can help students understand learning so that students can be motivated and develop an interest in learning (Saputra, M. E. A., & Mujib, 2018). Therefore, students need to be given a stimulus using interactive multimedia so that it can stimulate students' interest in learning in class. Genially is an online learning media that can help teachers create creative and innovative teaching materials in the form of presentation materials, games, learning videos, and others. It can be concluded that learning media is used to support the learning process and as a tool to motivate students and foster students' interest in learning. The product links that researchers have developed are as follows: https://view.genial.ly/627f4b1174003e00189530d8/learning-experience-didactic-unit-tema-6-subtema-1-pembelajaran-2. The results showed that genially was useful for primary school teachers, and provided knowledge to other experts, about its effects on the learning process. Based on being a basic element in the use of genially, this learning effect was expected

to change the students' educational environment, in order for them to be more independent and motivated to learn. Conclusively, teachers were recommended to design game-based learning, gamification, or other digital interactives, due to the positive perceptions provided by elementary school teachers towards the use of the genially application (Hermita et al., 2021). The results of this study answer the question of how the elementary school teachers' perception of the use of instructional media involving technology. The elementary school teachers said that instructional media involving technology makes the teaching and learning process effective, especially during the COVID-19 pandemic period. The researchers suggest a future study about the use of instructional media to improve students' higher-order thinking skills

Conclusion

Media in the form of genially based interactive multimedia learning for class V SD/MI students has a position as a supplement (additional) to the learning process. Media in the form of genially based interactive learning multimedia to assist the thematic learning process in theme 6 subthemes 1 learning 2 class V SD based on development research objectives. Media in the form of genially based interactive learning multimedia meets the appropriate criteria so it can be used in elementary schools. This means that the media is in the form of genially based interactive learning multimedia which has been developed to be feasible and interactive so that it can help the thematic learning process and increase students' interest in learning.

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