

Implementation of Digital-Based Learning Media on Thematic Material on Students' Scientific Abilities

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Abstract: Learning applied to elementary school-age children is very crucial, because the methods and processes of teaching teachers seem to force students to be able to achieve predetermined competencies. This research uses the (SLR) method. regarding research methods: "Literature" which means it is a critical analysis of the research that is being carried out on a special topic or in the form of a question to a part of science. helps us in compiling a framework that is in accordance with the theory, findings, and results of previous research in solving the problem exposure in the research conducted. The implementation of digital-based learning media on thematic material on scientific abilities can be used optimally, especially for elementary school level students, using digital-based media can certainly stimulate the cognitive, affective and psychomotor abilities of students, especially in accordance with the characteristics of 21st century learning where modern learning utilizes the sophistication of information and communication technology, the role of the teacher as a facilitator is very important in creating interesting and fun learning.

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Introduction

Education is a process with certain methods so that people gain knowledge, understanding, and ways of behaving in accordance with their development. Law of the Republic of Indonesia Number 20 of 2003 concerning the national education system explicitly writes that education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have religious spiritual strength, self-control, personality, intelligence, noble character, and skills needed by themselves. Education is important to advance a child's knowledge, character and body. It is important and inseparable because humans must grow holistically. Thus, the educational process for children must be in accordance with the growth and development of a child in carrying out the learning process.

Education can be interpreted as teaching because education in general always requires teaching. The learning process carried out by learners is an experience of receiving, hearing, and seeing what is conveyed by the teacher. In this case, the most important thing is how learners can process the abilities that exist in themselves. The ability of these learners is reflected in all the intelligence they have (Awang et al., 2019).(Awang et al., 2019).

The development of information and communication technology (ICT) has advanced in accordance with the times in the world of ICT has begun to show progress in the field of education. Education today has begun to utilize the development of information technology to support the learning process. In the 2013 curriculum the government provides direction that in the process of learning activities it must be interesting, effective, innovative and fun. The purpose of this direction is to make the learning process more enjoyable and not to bore students in participating in the learning process. Information and communication technology is needed in the field of education and the activities of the teaching and learning process. The Ministry of Education and Culture, suggests that the learning process is an effort that can provide direction to students in the learning process, discover new knowledge, gain new experiences in learning students. So as to get the expected learning objectives. Along with the development of the times and technology, teachers are also required to be able to improve their competencies so that learning is achieved in accordance with its goals. (Kumalasani & Eilmelda, 2022).

The 2013 curriculum emphasizes student character building. The learning applied in the 2013 curriculum is integrated thematic learning. Thematic-based learning activities are based on a theme in which the theme consists of several subjects that are combined into a theme. "Thematic learning is defined as a learning that is designed based on a particular theme" that thematic learning is defined as learning that is designed based on a particular theme. integrated thematic learning allows students either individually or in groups to explore and discover holistic, authentic, and meaningful concepts. Thematic learning in elementary schools in Indonesia, based on the 2013 integrated thematic curriculum, is an interdisciplinary, multidisciplinary, and transdisciplinary integration. So, thematic learning in elementary schools to integrate the dimensions of attitude, knowledge, and skills into a single unit, combining the competencies of several basic lessons to be connected to each other so that they strengthen each other, combining the core competencies of each lesson so that each lesson still has its own basic competencies and connecting various subjects with the surrounding environment. (Sari et al., 2018)

Education in the 21st century or known as the industrial revolution 4.0 era coexists with the use of digital technology and 21st century learning skills. 21st century skills or 4Cs include creative thinking, critical thinking and problem solving, communication, and collaboration. (Jannah & Atmojo, 2022). The achievement of 21st century skills is supported by the ability of educators to develop lesson plans that contain 4C activities. The learning process needs to use the help of media so that students have a good understanding of concepts. Effective and efficient utilization of learning media can stimulate students' abilities, especially in the realm of cognitive abilities.

Development is a process of gradual and qualitative functional changes experienced by individuals towards maturity, both in physical, cognitive, affective, interest, language and social aspects. Many factors are influential and intertwined in this development process, both categorized in innate elements and elements of experience gained in interacting with the environment. The cognitive aspect of elementary school children is one of the psychological aspects that really needs to be understood and lived by an educator because the nature of

learning organized by educators must be adjusted to the level of cognitive development of children. The cognitive system itself is a complex processing device in humans capable of acquiring, preserving, processing and transmitting information. (Basri, 2018).

Cognitive aspects have development in certain phases that differ according to the opinion of each psychologist. One of the psychologists of cognitive development theory is Jean Piaget. According to Piaget's cognitive theory, children at the age of elementary school students (7-8 years to 12-13 years) are in the concrete operational stage. In the learning process, children have difficulty understanding something abstract, in other words, children need concrete objects in order to think logically. Cognitive is a mental process related to abilities in the form of general recognition that is mental and characterized by the representation of an object into a person's mental image whether in the form of symbols, responses, ideas or ideas, and values or considerations. Therefore, cognitive factors play an important role in learning success, because most activities in learning are always related to remembering and thinking. The learning success of a student can be known based on the learning achievement obtained in the report card book which is indicated by values in the form of numbers and or letters. Learning achievement is the result of an educational assessment of student progress after carrying out learning activities. (Zakiah & Khairi, 2019).

In reality, learning applied to elementary school-age children is very crucial, because the methods and processes of teaching teachers seem to force students to be able to achieve predetermined competencies. Conventional learning, the tendency to only explain the method over and over again causes various problems in achieving learning objectives, the limitations of teachers in developing learning by utilizing digital media are minimal, these problems are clearly seen from the methods given by the teacher repeatedly.

The initial observation conducted by the researcher, Kalianda Elementary School students experienced a decline in terms of learning, the decline in learning is known from the lack of interest, motivation and learning outcomes of students, when learning is done students only see and listen to every explanation that the teacher gives the teacher, the lack of interaction between the teacher and the students creates problems where only the teacher becomes the teacher center. The lack of teacher ability in developing learning can certainly be overcome by developing learning by utilizing digital-based media. Educators today are required to keep up with the times. Teachers are subjects involved in the classroom learning process, such as checking attendance, teaching, motivating, guiding and assessing the learning process and outcomes. Teachers are required to have the ability in digital technology and create appropriate learning media for students, especially in the 21st century as it is today.

Digital media is one of the alternative media that is suitable and attractive to children in this century. In digital media, there are various features such as a combination of images, videos and sounds that make it easier for children to understand lessons, Video is one of the features in digital technology that is most favored by children in the 21st century. They often utilize YouTube sites to watch various videos. The videos they see are still limited to entertainment videos and games that are not related to learning. They are not familiar with learning videos. Learning video is a series of motion pictures accompanied by sound that form

a unity that is assembled into a flow, with messages in it for the achievement of learning objectives. (Farida, 2019).

Thematic learning in the 2013 curriculum is supported by the application of the scientific approach. The scientific approach is a scientific activity that includes observing, questioning, gathering information, associating and communicating. In this scientific approach, namely teaching students to be able to seek information from various sources with the aim that students do not continue to depend on teacher information alone. It can be said that the scientific approach is student-centered learning with the aim of directing students to be active in seeking and processing information. In carrying out the learning process, the teacher is needed as a facilitator and motivator in the learning process of students. (Sari et al., 2018). For this reason, this study was conducted to determine the implementation of digital-based learning media on thematic material on the scientific abilities of students.

Research Methods

This scientific article was prepared using the (SLR) method. about research methods: "Literature" which means it is a critical analysis of the research that is being done on a special topic or in the form of a question to a part of science. helps us in developing a framework that is in accordance with the theory, findings, and results of previous research in solving the problem formulation in the research that we make. The SLR method is used to identify, review, evaluate and interpret all available research with the topic area of the phenomenon of interest, with specific relevant research questions. With the use of the SLR Method, a systematic review and identification of journals can be carried out. To finalize this research, researchers collected journal articles from Google Scholar, Research Gate, SINTA, DOAJ, and Scopus. The keywords are Learning Media, Digital Media, Thematic, Scientific. The articles collected were only articles published from 2017 to 2023. From the various articles, researchers selected 8 articles that were closely related to the keywords used. The next step, researchers grouped articles related to the implementation of digital-based learning media on thematic material on the scientific abilities of students.

Result and Discusion

Based on the literature review that the researchers conducted, it is known that several studies presented the following results:

- 1) Research conducted by Nia Apriani in 2018 with the title development of powerpoint interactive multimedia in a scientific approach to improve understanding of mathematical concepts on the subject of statistics, the results of research on the development of Powerpoint interactive learning multimedia in a scientific approach to improve understanding of mathematical concepts in statistics include 5 stages, namely the stages of analysis, design, development, implementation, and evaluation. The product is then tested for validity through the results of the analysis of the trial activities. The stages of trial activities include needs analysis, material expert review, learning media design expert review, readability test, individual trial and limited trial. the effectiveness of using

PowerPoint interactive multimedia is achieved with the results of 74% of students having reached the minimum completeness criteria (KKM), students' responses to learning media based on PowerPoint interactive multimedia in a scientific approach in learning mathematics are interesting and easy to understand with the results of questionnaire calculations with an average of 3.68. (Apriani & The, 2018).

- 2) Riski Amailia et, al in 2019 with the title Implementation of scientific learning with kahoot media on student math learning outcomes. The results showed that the use of Kahoot media had an effect on the mathematics learning outcomes of students at SMKN Sukoharjo. This is indicated that there is a difference in the average math learning outcomes in scientific learning using kahoot media greater than the average scientific learning without using kahoot media. So that scientific learning using kahoot media is better than scientific learning without using kahoot media. Kahoot media can be used as an alternative learning media to increase the enthusiasm of students in the learning process in class. (Hendrowati, 2019).
- 3) Research conducted by Agus Ramdani, et, al, in 2020 with the title development of android-based learning media during the covid-19 pandemic to improve students' science literacy, from the results of the study, the conclusions obtained include android-based learning media developed obtained very valid results after going through the testing process by expert validators. Criticism and suggestions from validators are used as material for device improvement. Evaluation of each expert on android media components can be used for media improvement. In addition, the content in the android-based media developed follows the preparation guidelines and the concept of substances and their characteristics. (Ramdani et al., 2020).
- 4) Putri M Hutabarat, et, al, with the title of an electronic module based on a scientific approach to chemical bonding material in 2021, the results of the research implementation found that students with low cognition need an electronic module based on a scientific approach. The majority of these students have a visual learning style. Therefore, in this study, an electronic module was developed that was designed in such a way that consisted of text, images, and animations. This electronic module has been declared valid and practical by experts and practitioners. In addition, this electronic module was rated very well by students with visual learning styles. (Hutabarat et al., 2021).
- 5) Fauzi Bakri & Handjoko Permana in 2022, with the title of scientific learning-based digital media training to support the independent learning program, from the results of the study The use of Information and Communication Technology is a major component in the development of learning media and its transformation into digital media. The use of digital media in the scientific learning process can be an alternative solution that can be used to hone the abilities of science students in facing the challenges of 21st century learning and the independent learning program. Merdeka Belajar states that education must create a happy atmosphere. The independent learning program needs to be supported by fun digital learning media. Learning supported by digital media will make students easily understand the concepts learned so that fun learning can be realized. The training held aims to enable

- teachers to produce digital learning media that supports the implementation of learning in the independent learning program. (Bakri & Permana, 2022).
- 6) Research conducted by Annisa Anike Putri & Ardi in 2021, with the title improving student learning outcomes through interactive learning multimedia based on a scientific approach. The results showed that there are still many teachers who have not been able to develop innovative learning media that can facilitate student learning, which has an impact on low learning outcomes. The purpose of this research is to develop interactive learning multimedia based on a scientific approach to improve student learning outcomes on protista material. This type of research is development research using the 4D model. The object of this research is 30 experts and students. The techniques used to collect data are observation, interviews, and questionnaires. The instrument used to collect data is a questionnaire. The technique used to analyze data is qualitative and quantitative statistical analysis. Based on the results of the validation carried out, the validity value for interactive learning multimedia based on the scientific approach is 90.25% with a very valid category from material experts and 80.50% with a valid category from media experts and 82% with a valid category by Biology teachers. It can be concluded that interactive learning multimedia based on a scientific approach to Protista material is suitable for use in classroom learning. The implication of this research is that the developed media can be used to facilitate independent learning in students. (Putri & Ardi, 2021).
 - 7) Research conducted by Dewa Geda Agus Putra Prabawa & Made Prima Restami in 2020, with the title Development of thematic multimedia with a scientific approach for elementary school students. The utilization of Information and Communication Technology in elementary schools is still low so that it has an impact on the quality of learning, especially: (1) the application of the thematic approach has not been optimized. Based on these problems, the purpose of this research is to apply ICT by developing thematic multimedia with a scientific approach to optimize the learning outcomes of elementary school students. Multimedia is developed using the 4D model which consists of: define, design, develop, disseminate. The validity of multimedia is done through expert testing of 3 people and the attractiveness of multimedia is known through individual test of 3 people, small group test of 12 people, and field test of 21 people. Data were collected using questionnaire and test instruments. The implementation of multimedia in class II SD used a one group pretest-posttest design. Data from questionnaires were analyzed descriptively and test scores were analyzed using inferential statistics. The results showed that the validity of multimedia from the aspects of content, media, and learning design was in the "very good" category. Media attractiveness in individual, small group, and field tests is in the "very good" category. The results of the Wilcoxon statistical test obtained a significance of $0.001 < 0.05$, thus it can be concluded that thematic multimedia with a scientific approach is effective in improving thematic learning outcomes in grade II elementary school students. The applied multimedia has implications for increasing learning motivation, making it easier for students to understand material during the co-19 pandemic, and making it easier for teachers to implement thematic with a scientific approach. (Prabawa & Restami, 2020).

8) Komang Putri Damayanti & I Wayan Wiarta in 2022 with the title of application media based on scientific learning in elementary science content, from the results of this research study aims to create application media based on scientific learning in elementary science content. This type of research is development research (Research and Development). This research uses the ADDIE development model (Analyze, Design, Development, Implementation, and Evaluation). The subjects in this study included material, design, media experts and 27 fifth grade students in the field test. The data collection methods used in this study were interviews and questionnaires. The data analysis technique used was quantitative analysis. Validation by material content experts, learning design experts, learning media experts, and field tests obtained consecutive results of 100% with very good categories, 84.61% with good categories, 84.09% with good categories, 94.36% with very good categories. This means that the application media based on scientific learning in elementary science content is suitable for use in the learning process. The implication of this research is to encourage and motivate teachers to utilize existing learning facilities and infrastructure. (Damayanti & Wiarta, 2022).

The advantages of implementing digital-based learning media with a scientific approach include 1) interactive and interesting, digital-based learning media can present information interactively and interestingly through video, audio, animation, graphics and images. This makes learners more involved and interested in the learning process; 2) accessible anytime and anywhere, learners can access digital-based learning media anytime and anywhere using devices that can connect to the internet, and allow learners to learn independently and flexibly; 3) improve skills, especially in the field of technology, the use of digital-based learning media can be used to enable project-based learning, where learners can create products that demonstrate their understanding of the subject matter;

Conclusion

The implementation of digital-based learning media on thematic material on scientific abilities can be used optimally, especially for elementary school level students, using digital-based media can certainly stimulate the cognitive, affective and psychomotor abilities of students, especially in accordance with the characteristics of 21st century learning where modern learning utilizes the sophistication of information and communication technology, the role of the teacher as a facilitator is very important in creating interesting and fun learning.

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