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The Impact of the Implementation of E-Learning in Thematic Learning on the Academic Achievement Progress of Senior School Students

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ABSTRACT

Background: Emergency remote learning during the pandemic required secondary schools to implement digital systems, yet integrating e learning into thematic subjects introduces multifaceted instructional and technical hurdles. **Objective:** This study examined the implementation of e learning in thematic learning and analyzed its impact on student's academic progress at SMAN 1 Batujajar. **Method:** A qualitative descriptive field design was utilized. Data were gathered through direct observation, documentation, and in-depth interviews with students, teachers, parents, and the principal. Data trustworthiness was confirmed through source and method triangulation, followed by reduction, data display, and verification procedures. **Result:** The findings indicate that mobile e learning supports thematic instruction through flexible learning schedules, independent knowledge exploration, and multimodal enrichment using instructional videos. Nonetheless, instruction was constrained by unstable internet connections, limited device access, curriculum time restrictions, and learner fatigue from diminished direct classroom interaction. **Conclusion:** E learning represents a viable medium for enhancing student engagement in thematic curricula when supported by reliable connectivity and structured teacher facilitation. **Originality/Value:** This study offers novel empirical insights into educational technology by detailing the interplay between pedagogical flexibility and technical constraints regarding thematic e learning implementation in public secondary education. These findings serve as a strategic reference for blended curriculum development, digital infrastructure allocation, and school distance learning guidelines.

1. INTRODUCTION

Learning is an attempt to make students learn or an activity to teach students. Learning is an effort to create conditions that enable learning activities. In another interpretation, learning is planned efforts to manipulate learning resources so that the learning process is intertwined in students. Learning has the essence of planning or design as an effort to teach students. That is why, in learning, students do not only interact with all the learning resources used to achieve the desired learning goals (Alimni, 2015). Besides that, the delivery of teaching materials is almost entirely carried out in classrooms, which can result in late or non-delivery if the meeting does not take place. This can hinder student development. To overcome these problems, e-learning was created (Sukamto, 2012).

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E-learning is well known among the public and academics as online learning (Uzun, 2014). Another term for e-learning that is widely used is distance learning. E-learning learning is learning that takes place in a network where the teacher and those being taught do not meet face to face (Teo et al., 2018). E-learning learning is the use of the internet in the learning process. E-learning itself can be understood as formal education organized by schools, where students and instructors (teachers) are located in separate locations, requiring an interactive telecommunications system to connect the two and the various resources needed to support it. Recently, research results revealed that e-learning can be a breakthrough. The learning model with virtual classes (e-learning) is a breakthrough in the field of teaching and learning because it can minimize differences in teaching methods and materials, thus providing a more consistent learning quality standard (Elyas, 2018). The e-Learning system is necessary to anticipate current developments, supported by information technology, as everything is moving toward the digital era across both mechanisms and content (Chandrawati, 2010). Absolute criteria measure the program's success, namely the standards for implementing e-learning that have been previously set against the quality standards for ideal e-learning (Hanum, 2013).

The success of e-learning is supported by maximum interaction between educators and students and between students and various educational facilities (Hartanto, 2016). The existence of various kinds of e-learning systems makes students more independent and creative. Meanwhile, teachers need to be more innovative and younger to update materials or teaching models in line with current demands (Nadziroh, 2017). E-learning is distance learning that utilizes computer technology, computer networks, or the internet. E-learning allows students to learn on computers from their own locations without attending face-to-face classes. E-learning is often understood as a form of web-based learning that can be accessed via the internet, either on a local network or directly . The e-learning model can help increase the effectiveness and flexibility of learning. Through e-learning, learning materials can be accessed anytime and from anywhere; in addition, these materials can be enriched with various learning resources, including multimedia, which are quickly updated by the teacher (Maryani, 2016).

The peak of e-learning occurred during the pandemic. The coronavirus is a new virus that is transmitted to humans. This virus can attack anyone, including infants, children, adults, the elderly, pregnant women, and nursing mothers. This virus was first discovered in Wuhan City, China, at the end of December 2019. This virus is called COVID-19. With the COVID-19 outbreak, students must be able to learn using e-learning. This causes students who are not used to it to adapt first (Ichsan et al., 2020). Since the outbreak of the Coronavirus disease in Indonesia, the Government of Indonesia and the Ministry of Education and Culture have implemented online learning to reduce the spread of the virus.

The COVID-19 pandemic began at the end of last March, and until the end of this September, teachers at SMAN 1 Batujajar have been learning through e-learning in the 2021/2022 academic year. E-learning facilitates teachers and students in assigning and providing materials and assessments. E-learning is also simple to use with a Google account, without incurring additional costs, so during the current pandemic, it can be an option for learning. Learning using e-learning is relatively more flexible. This can be seen from an unspecified time and place. In addition, the number of students who can be reached is broader, not limited to a specific number. This is because the learning process is not dependent on time or place. Wherever and whenever, students can learn and interact online (Suharyanto & Adele, 2016). In other words, learning opportunities are truly wide open for anyone in need. E-learning is a learning technology that can be used online, enabling learning without direct face-to-face meetings between teachers and students. E-learning can help students learn anytime, anywhere.

Based on preliminary observations, it was found that students at SMAN 1 Batujajar had implemented online learning, with teachers in thematic learning subjects usually using e-learning and supported by facilities that facilitated e-learning. In addition, the teacher prepares before the lesson takes place, such as creating learning videos related to the material or downloading videos from the internet on the same topic. In interviews, the teacher said the application of e-learning at this time must also be balanced with learning environmental factors. The learning environment is like the learning environment at home or where students live. Because of this, e-learning enables students to learn at home without meeting face-to-face with the teacher, and environmental factors also play an important role in student learning processes. As we know, students live in society, inseparable from the physical and social environments, including the community and family (Hermino, A., & Arifin, 2020).

Electronic learning systems, or e-learning, are a new way of teaching and learning. E-learning is the basis and logical consequence of the development of information and communication technology. Through e-learning, students do not just sit in the classroom listening to every teacher's words directly; instead, they focus on using online media. E-learning can also shorten the target learning schedule and, of course, save the costs incurred by a study or educational program (Silauddin, 2015). As an important note, when using e-learning, various deficiencies

and obstacles encountered during the application of learning strategies hamper learning science and the environment. Even so, this e-learning is one of the solutions to keep learning going during the COVID-19 outbreak. Student participation in e-learning is what most determines the success of implementing this e-learning. Students who actively participate and provide comments during e-learning lessons will better understand the knowledge they are studying (Nwagwu, 2020; Pham et al., 2019). As a learning strategy, e-learning is the ideal choice during the COVID-19 outbreak.

The application of information technology, such as e-learning, will bring about changes in the education system as it is today. During a pandemic, materials will be delivered online, and various kinds of impacts will be felt by students, teachers, and parents (Karwati, 2014). The application of e-learning in thematic learning can help students develop meaningful insights, as this integrated learning model uses a thematic approach that involves several subjects to provide meaningful experiences. It is called "meaningful" because, in thematic learning, students will understand the concepts they learn through direct experience and relate them to other concepts they have understood or in everyday life. The problem in schools is that many students are not accustomed to e-learning. As with the COVID-19 outbreak, students must be able to learn using e-learning. This causes students who are not used to it to adapt first, especially students at the junior high school level. What is more, students must be able to adapt to thematic learning with e-learning. Being lazy to learn is a problem that often arises (Hariadi & Simanjuntak, 2020). Therefore, it is necessary to describe and examine students' responses to e-learning during the COVID-19 outbreak, particularly in science and environmental studies.

This study aims to determine the impact of implementing e-learning in thematic learning and its influence on students' learning development at SMAN 1 Batujajar. The results of this research are expected to provide a basis for consideration and support, and to offer ideas to decision-makers regarding the impact of implementing e-learning on students' thematic learning processes in schools.

2. METHOD

2.1 Research Design

This research is a type of field research (field research) with a qualitative approach, which is a study that intends to understand the phenomena experienced by research subjects, such as behaviour, perceptions, motivations, and actions, holistically, and utilising descriptions in the form of words and language, in a special natural context and by utilising various natural methods. Qualitative research focuses on the activities of identifying, documenting, and understanding, with in-depth interpretation of the symptoms, values, meanings, beliefs, and general characteristics of a person or group in relation to life events. The approach used is descriptive, using written or spoken words from the people and the observed behaviour. This type of research is not presented in statistical figures but rather in words and descriptions of behaviour that have a richer meaning than just numbers.

2.2 Research Object

This research was conducted at SMAN 1 Batujajar in 2022. This research was conducted from May 31 to July 12, 2022. The researchers' decision to choose SMAN 1 Batujajar as the research location was based on the school's implementation of e-learning.

2.3 Data Collection

Data collection is the technique researchers use to collect data. Data collection is carried out to obtain the information needed to achieve the research objectives. Data collection instruments are tools used to collect data. Because it is a tool, data collection instruments can take the form of checklists, questionnaires, interview guidelines, and cameras for photos or recording images. Data collection techniques in this study were collected by:

a) Observation

Observation is the process of collecting data/information about a subject through direct observation. Observation is divided into two forms: direct and indirect observation (Utomo et al., 2024). Observation is a collection technique that requires researchers to go into the field to observe things related to space, place, actors, activities, time, events, goals, and feelings. By observing, researchers will gain very personal experience and knowledge, which is sometimes difficult to express in words. Observation is also helpful for reflection and introspection. This knowledge is more than written data because it is experienced directly. Observations were conducted with fifth-grade students and teachers, focusing on e-learning to examine its impact on thematic learning processes.

b) Interview

An interview is a conversation or dialogue conducted with a specific purpose. Dialogue conducted by the interviewer to obtain information from the interviewee. The author conducted interviews to gather data on the impact of e-learning implementation on students' thematic learning processes at SMAN 1 Batujajar.

c) Documentation

Documentation is the search for data about things or variables, in the form of notes, transcripts, newspapers, and so on. The documentation data in this study include recordings of interviews with participants and photos related to the research process.

2.4 Data Validity Test

Triangulation is used to test the validity of the data. Triangulation in testing this credibility is defined as checking data from various sources in various ways and at various times. Thus, there is triangulation of sources, of data collection, and of time. Triangulation of sources to test the credibility of the data is achieved by comparing data from multiple sources.

In this study, the sources were students, teachers, principals, and parents. To test the credibility of the data from observation, interviews, and documentation, triangulation was used. Triangulation of this study by comparing and checking the degree of trust in the results of observations, interviews, and documentation. The data validity test is explained in the following figure 1:

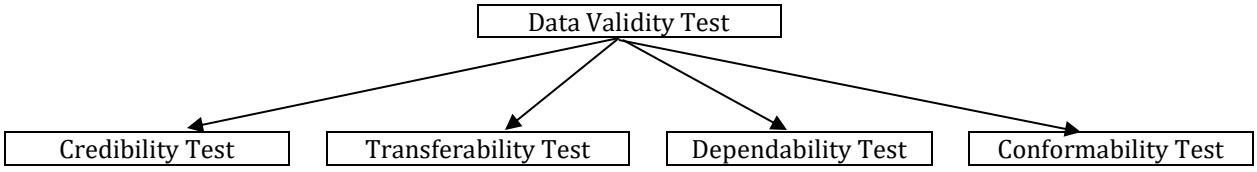


Figure 1: Data Validity Test

During data validation, an inspection technique is required, and the examiner's approach is implemented in accordance with specific criteria. Four criteria are used: credibility, transferability, dependability, and conformability. Various ways of checking credibility in qualitative research, namely, extending observations. Increased persistence, peer authors, triangulation, negative case analysis, and member checks

2.5 Data Analysis

Data analysis was conducted both during and after data collection, following qualitative procedures that included data reduction, data display, and conclusion drawing/verification. Data reduction involved summarising, selecting key points, and identifying themes, while data display was presented primarily in narrative form, supported by charts or matrices where necessary. Conclusions were considered provisional until supported by consistent and valid evidence. This study employed an explanatory sequential mixed-methods design, combining quantitative analysis using a pretest–posttest control-group experimental design with qualitative analysis to examine and validate the implementation of strength-based personal and social guidance to improve adolescent social adjustment. Quantitative analysis assessed program effectiveness by comparing outcomes between the experimental and control groups. In contrast, qualitative analysis, including domain, taxonomic, component, and thematic analysis, was used to refine and validate the guidance program.

3. RESULTS AND DISCUSSION

3.1 Results

Based on the problem formulation explained by the researcher in the introduction, the researcher will describe the research results on the impact of implementing e-learning on the thematic learning process for students at SMAN 1 Batujajar. The following presents the results of in-depth interviews with several informants in this study. In addition, the researcher will also describe the data from the results of observations and interviews that have been conducted as follows:

First, technological progress has a significant influence on all aspects of life, including education, such as the rapid changes in the learning process, the ability to learn anytime and anywhere, and the ability to learn without meeting face-to-face between the teacher and students.

Second, the COVID-19 pandemic has had a significant impact on all aspects of life, including education, as classroom teaching and learning activities we have been carrying out so far have changed in line with the government's policy to limit work, study, and worship activities from home.

Third, the learning system at SMAN 1 Batujajar has implemented online learning at home using e-learning on mobile phones. In addition to implementing a strategy, use a set of teaching methods. The learning method can also be understood as the method the teacher uses to carry out their functions and as a tool for achieving learning goals. In teaching and learning activities, teachers need methods to achieve a learning goal.

Fourth, the learning method used is almost identical to the face-to-face method; the interaction is not direct between the teacher and students. The learning methods used include lectures and assignments. Procedures for implementing e-learning are a set of basic foundations that are intrinsically required for implementing thematic learning processes, procedures that have been implemented alongside e-learning in thematic subjects for students at SMAN 1 Batujajar.

Fifth, in the application of e-learning during thematic learning activities for students at SMAN 1 Batujajar, as long as they follow the flow of technological developments, they have implemented e-learning learning. In class V, it has been applied to thematic learning; students are asked to complete various assignments online. This follows students' statements about their opinions regarding the application of e-learning in thematic subjects.

Sixth, the application of e-learning in subjects has been running for almost a year at SMAN 1 Batujajar. This school is new to implementing e-learning. As we know, e-learning requires technology and an internet connection, making it difficult for students to access the teacher's link. In every learning, there must be some impact that slows the learning a little. Many things have an impact on the application of e-learning in thematic subjects for class V students of SMAN 1 Batujajar, such as being hampered by the internet network, no cellphones, and students' limited knowledge of technology and learning spaces, which make them unable to meet directly with teachers and peers, making them bored faster in the learning process.

The results of the study show that the application of e-learning in schools can serve as an appropriate design for developing better learning methods, given its flexibility, scalability, and functionality, which make it easy to carry out teaching and learning activities anywhere and anytime. The impact of e-learning learning has a positive and significant effect on the quality of student learning. This influence is in a strong category. This indicates that the more intensive e-learning is used, the higher the quality of student learning will be. In addition, the use of web-based e-learning will indirectly improve learning outcomes, as the purpose of e-learning in the learning system is to broaden access to education and improve learning quality.

3.2. Discussion

Based on the research results obtained from interviews and observations, as well as the findings that researchers have carried out. Results of interviews conducted by researchers on the impact of implementing e-learning on students' thematic learning process at SMAN 1 Batujajar. So, in general, the results of the research previously described show that implementing e-learning positively affects the thematic learning process of students at SMAN 1 Batujajar, making it easier for teachers and students during a pandemic. During the COVID-19 pandemic, the learning process at SMAN 1 Batujajar, which had previously been conducted face-to-face, had to be shifted to online learning. The school policy only implements online learning through several platforms, which it believes can facilitate e-learning and help break the chain of coronavirus transmission.

The application of e-learning has many positive impacts, including easy access: you can learn the material you want using a cell phone (Acharya, 2019). Study time becomes more flexible so that it can be done anytime, anywhere. Even though learning is carried out online, the teacher still prepares lesson plans such as preparing lesson plans, annual programs and semester programs which are carried out according to conditions during the Covid-19 pandemic, teachers also make assignments to be uploaded via e-learning, learning videos that are adapted to the learning material and also the teacher must have skills in implementing e-learning so that all of its features can be utilized to the fullest.

The application of e-learning in thematic learning helps students be more active because it allows them to develop their knowledge and creativity further (Al-araibi et al., 2019), as explained, and is student-centred. Students as subjects in the learning process (Alhawiti & Abdelhamid, 2017). With the implementation of e-learning in thematic learning, students can study anywhere, allowing them to observe phenomena in their local environments. This sim-

plifies the thematic learning process by providing students with a direct experience. Students can directly relate learning materials or themes to their daily lives or consult various references on Google or YouTube (Back et al., 2015).

A sound e-learning system should be designed by related parties, namely the education office and schools. Each school should have its own e-learning system that can be accessed anytime, not just during the COVID-19 outbreak. So that, whatever happens, the e-learning infrastructure is ready to be used at any time. This can minimize the various obstacles that occur during an outbreak like COVID-19. Another problem arising from e-learning is that teachers sometimes give many assignments to students. This can actually be anticipated by limiting the number of assignments given each day. The principal has the authority to give a warning to teachers who give too many assignments. In addition, e-learning can be replaced by innovations such as various games and learning media (Ichsan, 2019; Lay & Osman, 2018; Rahmayanti et al., 2020).

The application of e-learning also helps the thematic learning process, because, with the learning process through the internet (online), the teacher can develop learning media, such as sending learning videos that cover the themes being taught to clarify the concept of thematic learning consisting of various subjects (Eleithy & Sobh, 2015). In the learning process, the time available is minimal. The application of e-learning in thematic learning makes the learning process ineffective due to time constraints (Lay & Osman, 2018). As is well known, thematic learning combines subjects such as Indonesian, natural sciences, social sciences, and civics education. These subjects are arranged into various themes and teaching (Mhouti et al, 2017). This means the teacher must be competent with time and learning materials to ensure learning runs well.

When delivering e-learning in science and environmental studies, such as during the COVID-19 outbreak, students should be invited to explore various videos related to the topic being studied. According to this study, video is one of the most popular media types for students. Teachers do not have to make their own learning videos; they can draw on a variety of valid sources. This media will help students understand various materials, rather than having to read texts that contain a lot of writing. The sophistication of multimedia technology supports science and environmental learning through e-learning (Ichsan et al., 2020; Said & Sharif, 2016; Tyabaev et al., 2015). Learning through e-learning for the future must continue to be improved to enhance the quality of education at this time. The COVID-19 pandemic should be a momentum for improving education, mainly so that students become accustomed to using technology-based learning media.

The application of e-learning-based thematic learning has advantages (Chamisitajin et al., 2022) including (1) it allows students to be more able to focus their attention on a particular theme; (2) Enable students to learn and develop various basic competencies between subjects on the same theme; (3) make students' understanding of the subject matter deeper, meaningful and more memorable; (4) making basic competencies better developed by linking other subjects to students' experiences (Mayer, 2003; Pituch & Lee, 2006); (5) making teachers save more time because the material is presented in an integrated manner; (6) making students more motivated so that learning activities become more meaningful to students; (7) this learning provides experiences and learning activities that are very relevant to the development and needs of children; (8) this learning can develop students' social skills such as: cooperation, tolerance, communication, virtuous behavior, and being able to accept feedback (Beetham & Sharpe, 2007; Rachmadtullah et al., 2018; Seok, 2008); (9) this learning emphasizes the problems that students often encounter in their environment; (10) the material in learning acts more as a means and tool, so that students can see that there are more meaningful relationships; and (11) the material presented in an integrated manner makes students more focused and not fragmented so that mastery of the subject matter becomes better and increases.

In addition to the positive impacts above, implementing e-learning also has various negative impacts. The impact students and parents feel after e-learning implementation is a weak internet network or limitations in buying internet quota. Internet connection is the most important factor in implementing e-learning (Gündüz et al., 2016). If there is no internet connection, students cannot download material or assignments sent by the teacher, nor can they collect assignments again. When implementing e-learning, the teacher cannot track students' actual progress. In the process, the teacher only gives assignments, and students provide feedback in the form of answers or learning outcomes (Yunita & Komsi, 2023). So the teacher does not know whether the student understands. The application of e-learning requires that all teachers, students, and parents be adaptable in the current situation (Ichsan, 2019). The use of technology-based learning media, information, and communication is one way to keep learning going during the COVID-19 pandemic. This requires teachers, students, and parents to quickly master technology-based learning media. Parents have an important role in student development (Utomo & Alawiyah, 2022; Utomo et al., 2022; Pahlevi & Utomo, 2022). Providing e-learning materials can make students experience difficulties in understanding the material due to individual differences, as the ways of receiving lessons and thinking are not the

same. This is one of the obstacles to implementing e-learning during the COVID-19 pandemic. Think not the same. This is one of the obstacles to implementing e-learning during the COVID-19 pandemic.

As for efforts to mitigate the negative impacts of e-learning on students' thematic learning processes at SMAN 1 Batujajar, the principal must map the internet needs of teachers and students. In addition to school operational assistance funds, the principal must consider other sources to meet this quota. For example, working with internet providers in this area whose signal is good and whose prices are low or discounted. We are looking to find out if there is a free quota that students can use to access these learning media. E-learning is used as digital literacy-based learning (Utomo & Prayogi, 2021). The application of e-learning requires teachers to be creative, especially in using media, methods, and learning strategies (Mirabolghasemi et al., 2019). To improve teachers' competence in teaching during the Covid-19 pandemic, many activities have been organised by the central government (in this case, the Ministry of Education and Culture), universities, community organisations, and even teacher working groups in their respective unit areas. In addition, it is hoped that teachers can foster curiosity, continue to improve their performance by keeping up with the times, and build self-confidence in carrying out their duties as educators, thereby reducing feelings of anxiety when carrying out tasks in the future. A good understanding of children's differences is the key to establishing effective communication with students (Sutter & Smith, 2017). The way the teacher deals with these different student characters is by creating a conducive learning climate and motivating students to be more active in the learning process. Often, motivation is the most significant driver of students' learning, even in limited conditions like now.

E-learning is learning that uses the internet, offering accessibility, connectivity, flexibility, and support for various types of learning interactions. The implementation of e-learning requires support for devices such as cell phones, computers, and tablets that can be used to access information anytime, anywhere. Online learning is a solution during the COVID-19 pandemic that can bring educators and students together to learn without meeting in person. However, the implementation of e-learning cannot be separated from the problems that affect it. These impacts include internet networks, supporting applications to support online learning, and limited services provided by teachers (Fikri et al., 2021)

4. IMPLICATIONS AND CONTRIBUTIONS

4.1 Reseach Implication

The results of this study indicate that restricting smartphone use significantly affects students' interest in learning. Therefore, schools need to develop structured, proportionate policies for the use of digital devices in educational settings. Teachers and school administrators can design clear rules for device use, accompanied by supervision and the integration of learning strategies that continue to utilize technology educationally. Pedagogically, these findings emphasize the importance of managing digital distractions to create a conducive learning environment. In addition, parents need to be involved through intensive communication so that restrictions on smartphone use are implemented not only at school but also consistently at home, to support the continuous improvement of students' interest in learning.

4.2 Reseach Contribution

This study provides empirical contributions to enriching the study of the influence of digital technology use on the affective aspects of learning, particularly the learning interest of elementary school students. Theoretically, these findings reinforce the concept that control over exposure to non-educational technology is associated with increased motivation and learning engagement. In practice, the results of this study can serve as a reference for teachers, principals, and policymakers in formulating data-based regulations on smartphone use. In addition, this study opens the door for further research to explore other variables, such as academic achievement, discipline, and the influence of targeted digital learning models on student learning development.

5. LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

5.1 Reseach Limitations

This study has several limitations that need to be considered when interpreting the results. First, the relatively small sample size, namely 31 students from one school, limits the generalization of the findings to a broader population. Second, the ex post facto research design did not allow the researcher to strictly control external variables, so other factors, such as parental support, teaching styles, or the home learning environment, may have

influenced students' interest in learning. Third, data collection using a scale instrument may be influenced by respondents' subjectivity. Therefore, the results of this study need to be understood in the context of the specific characteristics of the sample and research conditions.

5.2 Recommendations for Future Research Directions

Future research should involve a larger, more diverse sample, including a range of education levels and school backgrounds, to improve the generalizability of the results. In addition, the use of experimental or quasi-experimental designs can provide a more accurate picture of the causal relationship between smartphone use restrictions and learning interest. Subsequent researchers could also include additional variables, such as academic achievement, intrinsic motivation, self-control, or parental involvement, to gain a more comprehensive understanding. A mixed-methods approach combining quantitative and qualitative data could also provide a deeper analysis of students' experiences with smartphone use restriction policies in the school environment.

6. CONCLUSION

The application of e-learning to students' thematic learning processes has a positive impact: it is easy to access, as a cell phone is enough to access the material you want to study, and learning time becomes more flexible, so that it can be done anytime and anywhere. The application of e-learning in thematic learning helps students be more active by allowing them to develop their knowledge and creativity further, as thematic learning is student-centred. Students are subjects in the learning process. Students can observe phenomena in their local environment.

The application of e-learning in thematic learning makes the learning process ineffective due to time constraints. As is well known, thematic learning combines various subjects. Teachers can develop learning media, such as sending learning videos that cover and reinforce the themes being taught, to clarify the concept of thematic learning, which consists of various subjects.

Suggestions and recommendations. As for suggestions and recommendations from the results of this study, namely (1) for teachers, to improve teacher competence in operating technology-based media, teachers must learn through training or friends and teachers should improve their respective competencies, including skills in implementing e-learning so that this learning process can achieve the goal optimally; (2) for parents, they should pay more attention to children's learning processes when studying in their respective places and learning to use technology and internet networks, parents must spend time supervising children during the learning process; (3) for students, keep enthusiastic in participating in learning activities even though they do not meet directly with the teacher and their friends.

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Author Contribution Statement

All authors discussed the results, contributed to the final manuscript, and approved the final version for publication. Reza Pahlevi: Conceptualization, Design, Methodology, Writing - Original Draft. Performed data. Formal analisys. Mateus De Jesus Ximenes: Conceptualization, Writing - Review & Editing. Dk. Nurul Najiah Pg Abu Bakar: Conceptualization, Writing - Review & Editing.

Declaration of Generative AI (GenAI) Usage in Scientific Writing

The authors declare that the generative artificial intelligence (GenAI) tool (Google Gemini) was used in a limited capacity during the preparation of this manuscript. The tool was utilized solely to assist with language refinement, grammar checking, and improvement of clarity of expression. All research design, data collection, data analysis, interpretation of results, and conclusions were conducted independently by the authors. All instances of Generative AI usage in this article were conducted by the authors in accordance with the IJITL GenAI Tool Usage Policy, with the authors assuming full responsibility for the originality, accuracy, and integrity of the work.

Conflict of Interest Statement

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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