IMPLEMENTATION OF E-MODULES IN PRIMARY SCHOOL STUDENT LEARNING: *A SYSTEMATIC LITERATURE*

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Abstract

This research aims to identify and analyze the application of e-modules in primary education and evaluate their effectiveness in improving student learning outcomes. The method used is *Systematic Literature Review (SLR)*, which involves collecting and analyzing articles published between 2020 and 2025 related to the use of e-modules in primary schools. The research data was collected from various credible academic database sources, including *Google Scholar*, SINTA, DOAJ, *ResearchGate, and Scopus* resulting in 27 relevant articles for analysis. The results showed that the application of e-modules is very effective in increasing students' learning motivation, improving material understanding, and developing critical thinking skills. Technology-based e-modules, such as flipbooks and blended learning

models, can increase interactivity in learning and make it easier for students to learn independently. In addition, the integration of local wisdom and character values in e-modules plays an important role in student character building. E-modules are an effective solution to the challenges of education in the digital era. Its application in elementary schools can improve the quality of learning, provide an interesting learning experience, and support the implementation of the Merdeka curriculum. Therefore, the development and wider application of e-modules is highly recommended to support the learning process in primary schools.

Keywords: Learning Media, E-Module, Elementary School

Abstrak

Penelitian ini bertujuan untuk mengidentifikasi dan menganalisis penerapan e-modul dalam pendidikan dasar serta mengevaluasi efektivitasnya dalam meningkatkan hasil belajar siswa. Metode yang digunakan adalah *Systematic Literature Review (SLR)*, yang melibatkan pengumpulan dan analisis artikel-artikel publikasi antara tahun 2020 hingga 2025 terkait penggunaan e-modul di sekolah dasar. Data penelitian dikumpulkan dari berbagai sumber basis data akademik yang kredibel, termasuk *Google Scholar*, SINTA, DOAJ*, ResearchGate, dan Scopus* menghasilkan 27 artikel relevan untuk dianalisis. Hasil penelitian menunjukkan bahwa penerapan e-modul sangat efektif dalam meningkatkan motivasi belajar siswa, memperbaiki pemahaman materi, dan mengembangkan keterampilan berpikir kritis. E-modul yang berbasis teknologi, seperti flipbook dan model blended learning, dapat meningkatkan interaktivitas dalam pembelajaran dan memberikan kemudahan siswa dalam belajar secara mandiri. Selain itu, integrasi kearifan lokal dan nilai karakter dalam e-modul berperan penting dalam pembentukan karakter siswa. E-modul merupakan solusi yang efektif untuk menghadapi tantangan pendidikan di era digital. Penerapannya di sekolah dasar dapat meningkatkan kualitas pembelajaran, memberikan pengalaman belajar yang menarik, dan mendukung implementasi kurikulum Merdeka. Oleh karena itu, pengembangan dan penerapan e-modul secara lebih luas sangat dianjurkan untuk mendukung proses pembelajaran di sekolah dasar.

Kata kunci: Media Pembelajaran, E-Modul, Sekolah Dasar

INTRODUCTION

The development of technology has changed many aspects of life, including education. Along with these advances, educational institutions around the world have begun to develop various technological tools to improve the learning and teaching process. The world of education is entering a new era thanks to advances in information and communication technology, offering many new options for learning and allowing more people to have access to more interactive educational materials (Siagian & Silfiya, 2024). Students can access various learning resources through digital devices such as computers, tablets and mobile phones. These technological advances support student access to various learning resources such as e-books, e-modules, videos and virtual simulations.

In Indonesia, while national efforts have distributed ICT infrastructure to schools including primary schools' data from 2023 show that despite over 80% of distributed computers being utilized in learning activities, significant disparities remain in digital adoption and teacher competencies, especially at the elementary level (Kemendikbud, 2023). The Ministry of

Education, Culture, Research, and Technology has invested significantly allocating billions of rupiah annually to enhance digital infrastructure, teacher training, and platforms to support the "Merdeka Belajar" curriculum, yet many primary schools still face limitations in infrastructure and human resource capabilities (Kemendikbud, 2023).

Teachers are required to keep up with technological developments to keep students' enthusiasm for learning alive. Teachers must be able to conduct creative and innovative learning. Such constraints impact teachers' ability to implement innovative digital media like e-modules effectively, evidencing a gap between technological potential and on-the-ground classroom realities (Hakim & Yulia, 2024). This highlights the pressing need for improved infrastructure, continuous professional development, and supportive policies to maximize technology's benefits in Indonesia's primary education sector.

Many studies have demonstrated the effectiveness of e-modules in improving student motivation and learning outcomes. E-modules developed using a Problem-Based Learning approach significantly improved the mathematics learning outcomes of fifth-grade elementary school students (Melyastiti et al., 2023a). Similar findings were reported by Sari and Isdaryani (2024), who found that flipbook-based e-modules using a Project-Based Learning model were effective in enhancing understanding and learning outcomes in science. Furthermore, the integration of character values and local wisdom into e-modules has also proven to support contextual character development in students (Fena Emilda & Fadlillah, 2024).

Traditional education, which focuses too much on content mastery alone, is considered inadequate to equip students with the necessary skills to face the challenges of technological development in the future (Silaen et al., 2024). Although technology has developed rapidly, the implementation of innovative learning media in primary schools is still limited. There are still teachers who face difficulties in using innovative media in learning, this is due to limited facilities and lack of support from the government (R. Siregar et al., 2024). As a teacher it is expected to be able to create learning that is in accordance with the era of technological development in the present. One of the efforts that can be made is to create innovative learning media innovations to support more lively learning activities.

The importance of developing innovative learning media in elementary schools is enormous. The use of digital media in the teaching and learning process by elementary school teachers has a crucial role in improving the quality of education, especially in the midst of the challenges presented by the current digital era (Putra et al., 2024). The use of e-modules as one of the innovative learning media at the elementary school level is increasingly being chosen as an effective solution in facing educational challenges in the digital era. E-modules, which are electronic-based learning materials, provide flexibility and interactivity, thus improving the quality of the teaching and learning process. Through E-modules students have the freedom to access learning materials anytime and anywhere, which allows them to learn in a more independent way (Haqiqi & Sari, 2024).

The use of electronic learning media, particularly e-modules, has become a widely researched topic in the world of education. However, most existing studies have focused on the lower secondary education (SMP), upper secondary education (SMA), and higher education levels, with an emphasis on the effectiveness and implementation of e-modules at these levels (Melyastiti et al., 2023a). However, primary education, particularly elementary schools (SD), has distinct characteristics and needs that require in-depth specialised research. Studies on the implementation of e-modules in primary schools using a systematic and comprehensive

approach, such as Systematic Literature Review (SLR), are still very limited. Many studies at the primary school level are only case studies or limited experiments without providing a broad picture of the overall implementation of e-modules at this level (Mengist et al., 2020).

Therefore, this study contributes original findings that strengthen our understanding of the use of e-modules in primary education through a systematic and comprehensive SLR review of various relevant studies. The objective is to provide a comprehensive overview of the level of implementation, challenges faced, and the impact of e-module use on the learning process in primary schools. These findings are expected to serve as an important reference for the development of appropriate and effective digital learning media at the primary school level.

This *Systematic Literature Review* (SLR) is designed to recognize, analyze, and combine the results of various previous studies on the use of e-modules in learning at the primary school level. Through the *Systematic Literature Review* (SLR) approach, it is expected to gain a broader and objective understanding of the extent of e-module implementation, the challenges faced, and the impact caused in the learning process. This *Systematic Literature Review* (SLR) is expected to provide a deep understanding for teachers and policy makers on how e-modules can be a creative and effective solution in the learning process at the elementary school level.

METHODS

This research method adopts a *Systematic Literature Review* (SLR) approach to explore how e-module learning media is applied among elementary school students. *Systematic Literature Review* is an approach used to collect relevant evidence related to a particular topic, based on predetermined criteria (Mengist et al., 2020a). The data collection process is carried out systematically, by searching in various databases, such as *Publish or Perish*, *Google Scholar*, and other academic article search engines. The review process is carried out in an organized and systematic manner, following predetermined steps (Triandini et al., 2019). The specific criteria for the articles selected were those published between 2020 and 2025. The selection of articles includes studies relevant to the application of e-modules in the primary school education environment. The data collection process began by conducting a search using the keywords "e-module media use in elementary school students." From this search, about 100 types of literature relevant to the research topic were found. Furthermore, the suitability of the title and abstract of the 100 articles was analyzed, and 50 articles were determined that seemed suitable for further discussion. From the 50 articles analyzed, 27 relevant articles emerged. The relevant articles consisted of 15 international articles and 12 national articles. The remaining articles were then analyzed in depth. Through this rigorous process, it is hoped that deeper and more useful insights can be gained for the development of e-modules in the context of basic education.

RESULTS AND DISCUSSION
A. Results

Based on the analysis of 27 articles that discuss the implementation of e-modules in primary schools, it can be explained how this digital learning media is applied in the context of primary education. The following table presents the distribution of articles found by year of publication, covering articles published between 2020 and 2025. The findings highlight trends and developments in the use of e-modules as learning aids, while also providing insights into the effectiveness of e-modules in primary school settings. Thus, the information collected is not only relevant for understanding the application of e-modules, but also important for designing

policies and strategies for developing learning media at the basic education level.

Graph of Publications on the Use of E-Modules in Elementary Schools
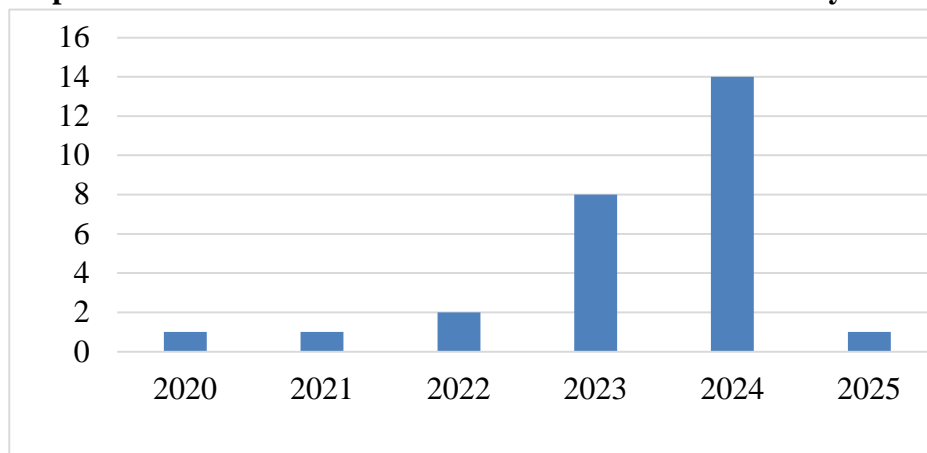
This graph illustrates the trend of publications regarding the use of e-modules in primary schools from 2020 to 2025. The graph shows the number of publications began to experience a significant spike in 2023 and reached its peak in 2024. During 2020 and 2021 the number of publications was fairly low with only one or two articles appearing. In 2024 the number of articles discussing e-modules in elementary schools jumped sharply, reaching around 14 articles. In 2025 the number of publications again experienced a decline with only a few articles released. This suggests that interest in researching the use of e-modules in primary schools boomed in 2024, influenced by the increased utilization of technology in education during the Covid-19 pandemic and the recovery process that followed.

Table 1. Journal Review Results

Title	Author	Journal	Research Results
Development of Blended Learning-Based E-Modules on Hadith Material about Intention in Madrasah Ibtidaiyah	Dani Cahyani Rahayu, Abdulloh Hamid, Mohammad Salehuddin, Winarto Eka Wahyudi	AL MURABBI: Journal of Islamic Religious Education (2020)	The blended learning e-module designed for Hadith material on Intention in Madrasah Ibtidaiyah has been proven effective and can be used as an alternative teaching material in the digital era. This e-module improves students' understanding of the material.
E-Modules Based on Problem Based Learning in Mathematics Subjects at Elementary School	Ni Made Melyastiti, Anak Agung Gede Agung, I Komang Sudarma	Scientific Journal of Education and Learning (2023)	This research aims to develop e-modules that apply Problem-Based Learning (PBL) modules to improve Mathematics learning outcomes for fifth grade elementary school students. The findings of this study indicate that the developed e-module is effective in improving mathematics learning outcomes of

			elementary school students.
The Effectiveness of the PjBL Model Assisted by Flipbook-Based E-Modules to Improve IPAS Learning Outcomes in Elementary Schools	Sinta Nela Mukti Sari, Barokah Isdaryani	Pendas: Scientific Journal of Basic Education (2024)	The research shows that the use of the Project Based Learning (PJBL) learning model supported by flipbook-based e-modules is very effective in improving students' understanding of Natural and Social Sciences (IPAS) in grade IV elementary schools.
Analysis of E-Module Flipbook Based on Problem Based Learning to Empower Critical Thinking Skills in Elementary School Science Learning	Sri Adhi Endaryati, Idam Ragil Widianto Atmojo, St. Y. Slamet, and Kartika Chrysti Suryandari.	DWIJA CENDEKIA: Journal of Pedagogical Research, (2021)	E-module flipbook with Problem Based Learning (PBL) model is proven to be effective in improving students' critical thinking skills in the classroom during Natural Science (IPA) lessons in elementary schools.
Analysis of the Use of Social Skills-Based E-Modules to Introduce Corn Local Wisdom in Science Learning at Elementary School	Ayik Fena Emilda and M. Fadlillah	ELSE (Elementary School Education Journal) (2024)	E-modules based on social skills and linking local wisdom about corn in science learning in elementary schools are proven to be effective. It can increase students' interest in learning and help them understand the material about the water cycle.
E-Modules for Pancasila Education Subjects Based on the Pancasila Learner Profile for Grade VI Elementary School Students	I Komang Triana Saputra and Ni Wayan Suniasih	Indonesian Journal of Instruction (IJI) (2024)	The development of e-modules for Pancasila Education lessons focusing on the Pancasila Student Profile proved successful in improving student learning outcomes in grade VI of SD Negeri 7 Pedungan.
Implementation of Flipbook-Based 'Kayanya Negriku' E-module on Learning Outcomes of Grade IV Elementary School Students	Anggi Hanidya Purbasari, Candra Dewi, and Ellys Mersina Mursidik	Basic Scientific Conference Proceedings (2022)	The flipbook-based e-module entitled "Kayanya Negriku" can have a positive impact on the learning outcomes of grade IV students in elementary schools. This e-module is designed to attract students' attention and interest during the learning process, as well as help them better understand the material taught by the teacher.

Developing E-Module Based on Local Wisdom Supported by Flipbook Application for Social Studies Teaching on Learning Outcomes of Grade IV Students of SDN 112 Botto	Asmah, Nursalam, and Hidayah Quraisy	Asmah, Nursalam, and Hidayah Quraisy (2022)	E-modules that combine local wisdom and flipbook technology can increase students' enthusiasm for learning and provide a more interesting and relevant experience for them, so that learning outcomes have improved.
Development of Ethno STEM-Based Teaching E-Modules on Merdeka Curriculum in Elementary Schools	Sunedi and Sylvia Lara Syaflin	JagoMIPA: Journal of Mathematics and Science Education (2024)	E-modules that integrate Ethno STEM for learning math materials about flat shapes in the Merdeka curriculum in elementary schools have proven to be very effective and easy to use.
Development of Flipbook-Based E-Modules on Mathematics Content of Fractions and Fraction Transformation in Grade IV SD	Popy Khumairoh and Tiflatul Husnah	INVENTION Journal of Research and Education Studies (2023)	Flipbook-based e-modules that discuss fractions and how to convert fractions for grade IV SD can help increase students' interest and enthusiasm for learning.
Development of Multicultural Education E-Modules Based on Additive Approach for Elementary School Students	Muh Muhaimin, Hamidaturrohmah, Nur Afif Wahyudin, and Natasya Arieni Fasha	Journal of Elementaria Edukasia (2023)	The development of multicultural education e-modules using an additive approach has proven to be very effective in teaching cultural diversity and character values to students in elementary schools.
Development of E-Modules on Violence Prevention in Elementary School	Yuniar Marhamah S. Ibrahim, Wiwy Triyanty Pulukadang, Reska Putri Ismail, Rusmin Husain, and Candra Cuga	EDUTECH: Journal of Technology-Assisted Education Innovation (2025)	This e-module is very helpful in addressing the issue of violence in schools. In addition, learning through e-modules can raise students' awareness about the issue of violence and teach them how to prevent violence.
Flipbook Maker Based E-Module Development Design in Thematic Learning in Elementary School	Surahman, Indri Astuti, and Afandi	Journal of Educatio (2023)	E-modules made with Flipbook Maker make it easier for students to understand the material so that learning becomes effective.

Title	Authors	Journal	Findings
Development of E-Modules on Puberty Materials to Train Digital Literacy of Madrasah Ibtidaiyah Learners	Yanti Astuti, Suyidno Suyidno, Suryajaya Suryajaya, Nor Jamilah	Science Education Journal (SEJ) (2024)	E-modules are suitable for use in science learning and can be a medium for training students' digital literacy skills through project activities, in accordance with what is expected in the independent curriculum.
Development of Global Warming E-Modules Based on Education for Sustainable Development for Elementary School	Elca Berlianti W.M., Ghullam Hamdu, Agnestasia Ramadhani Putri	Attadib Journal (2024)	E-modules are feasible to use as a supplement to independent teaching materials, motivate students to learn independently, are easily accessible, and can enhance the learning experience through multimedia features, practice questions, games, and material explanation videos.
E-Modules of Social Studies on Indonesian Cultural Wealth Based on Tolerance and Love for the Country Character for Grade IV Elementary School	Amalia Dwi Masitha, Prihatin Sulistyowati, Yulianti	SITTAH: Journal of Primary Education (2024)	This e-module is effective in increasing students' learning motivation, facilitating understanding of the richness of Indonesian culture, and instilling the value of tolerance and love for the country.
Problem-Based Learning Flipbook E-Module in Improving Students' Critical Thinking Skills in "Always Save Energy" Thematic Learning	Sri Adhi Endaryati, St. Y. Slamet, Kartika Chrysti Suryandari	International Journal of Elementary Education (2023)	E-module flipbooks that use a project-based learning (PBL) approach are proven to improve students' critical thinking skills and learning motivation.
The Design of Covid-19 Disaster Mitigation E-Module for Students of Grades 1 in Primary School	Arwin Arwin, Ary Kiswanto Kenedi, Yesi Anita, Ciptro Handrianto	Advances in Social Science, Education and Humanities Research (2022)	The e-module on Covid-19 disaster mitigation developed is effective to educate students about the dangers and how to prevent the spread of Covid-19.
Developing the Interactive E-Module Based on Integrated Learning for Primary School Students	Risda Amini, Usmeldi	International Journal of Information and Education Technology (2022)	This e-module proved to be effective in improving students' abilities, both knowledge, skills, and attitudes.
Development of a Science E-Module Based on Contextual	Tiasari Siregar, Saronom Silaban, Anita Yus	Curriculum Innovation (2024)	CTL-based e-modules are proven to be effective in improving student learning

Teaching and Learning for Primary School Students			outcomes in grade V elementary school.
Plantasika e-Module with Problem Based Learning (PBL) Model for Class IV Primary School Students	Valentia Febriyanti, Tri Joko Raharjo, Deni Setiawan	International Journal of Research and Review (2024)	The Plantasika e-module developed with the Problem Based Learning approach was shown to be effective in improving learning outcomes and developing critical thinking skills in grade 4 elementary school children.
Social Studies E-Module Containing Balinese Folk Tales Based on Pancasila Student Profiles for Fourth Grade Elementary School Students	Ni Made Ari Sintya Dewi, I Gusti Agung Ayu Wulandari	Journal of Mimbar Ilmu (2024)	The social studies e-module that raises Balinese folklore and is developed based on Pancasila Student Profile is proven to be effective and appropriate for use in the learning process. This module can not only improve students' learning outcomes, but also help shape their character in accordance with the values of Pancasila.
Development of E-Module Using Book Creator Application on Writing Material: A Development of Digital Teaching Material at Elementary School	Hani Atus Sholikhah, Khalidatun Nuzula, Novritika, Nandang Heryana, Tita Ratna Wulan Dari	PGMI Scientific Journal (2024)	This e-module has proven successful in increasing students' motivation and understanding when learning to write. By utilizing digital technology, this e-module offers a more interesting learning experience and can be adapted to the times and the needs of the Merdeka curriculum.
Development of Sustainable Lifestyle Project E-Module as Strengthening Environmental Awareness of Elementary School Students	Ristiana Dyah Purwandari, Difla Nurul Anisah, Subuh Anggoro, Akhmad Jazuli, Vira Zahra Alkharis	Revista de Gestão Social e Ambiental (2024)	This e-module project on sustainable lifestyles proved to be successful and can be utilized to build awareness of grade 2 elementary students on the importance of protecting the environment.
E-Module Innovation on Pancasila Student Profiles for First Grade	Ni Kadek Semartini Widya Ningsih	Journal of Educational Media and	The e-module developed based on the Pancasila student profile in this study proved to be

		Technology (2024)	effective for use in learning Pancasila Education in grade I SD.
Interactive E-Module Based on Ethnomathematics Upakara Bali in Geometry Subject for 2nd Grade Elementary School	Ni Luh Putu Divya Jyoti Mahardika, I Made Suarjana, Basilius Redan Werang	Jurnal Mimbar PGSD Undiksha (2024)	An interactive e-module that integrates ethnomathematics based on Balinese ceremonies is proven to be valid and practical for learning geometry in grade 2. This e-module offers a solution to overcome the boredom that often occurs in monotonous learning methods, while increasing students' enthusiasm for learning.
E-Module Teaching Materials Based on Heyzine Flipbook on the Meaning of NKRI for Grade IV Elementary School	Putri Norma Puspitaningrum, Yuli Witanto	Journal of Educational Research and Evaluation (2024)	Heyzine flipbook-based e-modules are very suitable to support learning Pancasila and Civics Education (PPKn) about the meaning of the Unitary Republic of Indonesia in grade IV SD. With this e-module, students can learn more interestingly and interactively, and can improve learning outcomes.

B. Discussion

Based on an analysis of 27 studies on the use of e-modules in various educational contexts, some key patterns and benefits were observed. This research shows that e-modules serve as an innovative bridge between the digital world and the learning process, making it more relevant and appropriate to students' needs.

1. Increased Motivation and Interest in Learning

E-modules are proven to be able to arouse students' enthusiasm for learning. E-modules effectively increase students' motivation and understanding in writing (Sholikhah et al., 2024). A more interesting learning experience is the main key with the help of e-module media. Flipbook-based e-modules on fractions for grade IV SD can increase student interest (Khumairoh & Husnah, 2023). Multimedia factors also play an important role in increasing motivation. E-module media enhances the learning experience through multimedia features, practice questions, games, and explanatory videos that make the usually monotonous learning process more interesting (W.M. Berlianti et al., 2024).

2. Effectiveness in Improving Learning Outcomes

The use of e-modules is proven to significantly improve learning outcomes. E-modules are effective in improving elementary school students' math learning outcomes (Melyastiti et al., 2023b). Another study also found that flipbook e-modules with a

project-based learning (PBL) approach were able to improve students' critical thinking skills and motivation (Endaryati et al., 2023). The advantages of e-modules are not only seen in one subject, but cover various fields such as math, science, social studies, and religious education. CTL-based e-modules are effective in improving learning outcomes of grade V students in elementary schools (T. Siregar et al., 2024). This shows that e-modules can be well adapted in various learning contexts.

3. **Development of Higher Order Thinking Skills**

E-modules not only help students understand the material, but also hone critical thinking skills. The use of e-modules flipbooks with the Problem Based Learning (PBL) model is effective in improving students' critical thinking skills in Science lessons in elementary schools (Endaryati et al., 2021). These critical thinking skills are very important in today's information age. This is supported by the results of research on electronic modules with a PBL approach that successfully improved learning outcomes and critical thinking skills of grade 4 elementary school students (Febriyanti et al., 2024).

4. **Integration of Local Values and Character**

One of the advantages of e-modules is their ability to incorporate local wisdom and character values. E-modules that focus on social skills and integrate local wisdom related to corn in science learning in elementary schools have proven effective (Emilda & Fadillah, 2024). In addition, social studies e-modules that raise Balinese folklore and are based on the Pancasila Student Profile are also effective and feasible to use in learning. This module not only improves student learning outcomes but also helps build character in accordance with Pancasila values (Mahardika et al., 2024). E-modules are also proven to increase student learning motivation, facilitate understanding of Indonesia's cultural wealth, and instill the value of tolerance and love for the country (Masitha et al., 2024).

5. **Flexibility and Ease of Access**

One of the advantages of e-modules is their flexibility and ease of access. The ease of access to this media makes e-modules suitable as a medium for self-study and can motivate students so that they can be used in various situations (W.M. Berlianti et al., 2024). In addition, e-modules made with Flipbook Maker help students understand the material better and make learning more effective (Surahman et al., 2023). This shows that digital formats are very helpful in delivering material.

6. **Compliance with Merdeka Curriculum**

Many studies show that e-modules strongly support the spirit of the Merdeka Curriculum. Utilizing digital technology, e-modules provide a learning experience that is more interesting and relevant to the times and curriculum needs (Atus Sholikhah et al., 2024). In addition, e-modules can serve as a means to train students' digital literacy skills through project activities in accordance with the expectations of the Merdeka Curriculum (Astuti et al., 2024). This finding shows that e-modules are not only in line with, but also strengthen the philosophy of the Merdeka Curriculum.

7. **Varied Learning Approaches**

The success of e-modules is supported by the application of various innovative learning approaches. A total of nine studies show the integration of *Problem Based Learning* (PBL) and *Project Based Learning (*PjBL) methods in e-modules. The *Project Based Learning learning* model supported by *flipbook-based* e-modules proved effective in improving student understanding (Sari & Isdaryani, 2024). In addition, CTL-based e-

modules are effective in improving student learning outcomes which shows the importance of linking material with real-life situations (T. Siregar et al., 2024).

CONCLUSION

This study offers significant contributions both theoretically and practically to the field of education, particularly regarding the use of e-modules at the primary school (elementary) level. Theoretically, by employing a systematic literature review (SLR) approach, this research enriches the existing body of knowledge by providing a comprehensive and synthesized understanding of the extent, implementation patterns, challenges, and impacts of e-modules in elementary education. It addresses a notable gap in the literature where most prior studies focused on secondary and higher education, thereby advancing research on digital learning media tailored specifically for young learners. Practically, the findings provide valuable insights for teachers, school administrators, and policymakers. For educators, the evidence supporting the effectiveness of e-modules in enhancing student motivation, understanding, and critical thinking skills underscores the need to integrate these tools thoughtfully into the curriculum. School leaders are encouraged to invest in adequate technological infrastructure and professional development to empower teachers in effectively adopting e-modules. Furthermore, policymakers are urged to design supportive frameworks and allocate resources to narrow the digital divide that impedes equitable technology access in elementary schools, ensuring that all students benefit from innovative learning media. Ultimately, this study informs the strategic development and broader implementation of e-modules, contributing to improved educational outcomes and supporting the vision of technology-enhanced learning within the Merdeka curriculum framework.

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