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The Use of Technology in Curriculum Development and Social Studies Learning Design in Elementary Schools: A Critical Analysis and Literature Review

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Abstract

This study aims to critically analyze the use of technology in curriculum development and instructional design for Social Studies (IPS) as well as Natural and Social Sciences (IPAS) in elementary schools. The method used is a literature review with a Systematic Literature Review (SLR) approach. The SLR process involves a literature search from academic databases, followed by a review of abstracts and full texts. Content analysis was employed to identify and categorize findings, while triangulation techniques were used to validate the results by comparing various sources. The study's findings indicate that technology has been integrated into the curriculum development and instructional design of IPS and IPAS in various forms, including digital platforms, interactive multimedia, online resources, and collaborative tools. This use of technology has proven effective in increasing student engagement, expanding access to learning resources, enhancing students' understanding of complex concepts, and enabling more personalized learning experiences. However, challenges in implementing technology in elementary schools remain, including infrastructure limitations, the digital divide among students, the lack of teacher skills and knowledge, as well as time and curriculum constraints. To address these challenges, the study recommends several solutions, such as intensive teacher training, improved infrastructure and technology access, and sustained support from the government and community. Continuous training can enhance teachers' skills in utilizing technology, ultimately strengthening the quality of the IPS curriculum. The study emphasizes the importance of responsive, evidence-based strategies to support the integration of technology in elementary schools.

Keywords:
curriculum development; instructional design; technology

Abstrak

Studi ini bertujuan untuk menganalisis secara kritis penggunaan teknologi dalam pengembangan kurikulum dan desain pembelajaran Ilmu Pengetahuan Sosial (IPS) serta Ilmu Pengetahuan Alam dan Sosial (IPAS) di sekolah dasar. Metode yang digunakan adalah tinjauan pustaka dengan pendekatan Sistematik Literatur Review (SLR). Proses SLR melibatkan pencarian literatur dari basis data akademik, diikuti oleh peninjauan abstrak dan teks lengkap. Analisis konten digunakan untuk mengidentifikasi dan mengategorikan temuan, sementara teknik triangulasi dilakukan untuk memvalidasi hasil

dengan membandingkan berbagai sumber. Hasil penelitian menunjukkan bahwa teknologi telah diterapkan dalam pengembangan kurikulum dan desain pembelajaran IPS atau IPAS, dengan berbagai bentuk penggunaan seperti platform digital, multimedia interaktif, sumber daya online, serta alat kolaborasi. Penggunaan teknologi ini terbukti efektif dalam meningkatkan keterlibatan siswa, memperluas akses ke sumber belajar, memperdalam pemahaman siswa terhadap konsep yang kompleks, serta memungkinkan pembelajaran yang lebih dipersonalisasi. Meskipun demikian, tantangan dalam penerapan teknologi di sekolah dasar masih ada, termasuk keterbatasan infrastruktur, kesenjangan digital di antara siswa, kurangnya keterampilan dan pengetahuan guru, serta waktu dan kurikulum yang terbatas. Untuk mengatasi tantangan tersebut, studi ini merekomendasikan beberapa solusi seperti pelatihan intensif bagi guru, peningkatan infrastruktur dan akses teknologi, serta dukungan berkelanjutan dari pemerintah dan masyarakat. Dengan pelatihan berkelanjutan, keterampilan guru dalam menggunakan teknologi dapat ditingkatkan, yang pada akhirnya akan memperkuat kualitas kurikulum IPS. Studi ini menekankan pentingnya strategi yang responsif dan berbasis bukti dalam mendukung integrasi teknologi di sekolah dasar.

Kata Kunci:
desain pembelajaran; pengembangan kurikulum; teknologi

Introduction

Curriculum development is a process of designing and developing a learning plan that includes objectives, content, teaching methods, and assessments to achieve the desired competency outcomes. The main goal of curriculum development is to provide students with relevant, comprehensive, and effective education. This process involves understanding the needs and characteristics of students, advancements in science and technology, and the demands of society and the workforce. A curriculum must reflect the values, culture, and interests of the community where the school is located. More than just a document, the curriculum also serves as a tool and guide for educators in achieving national education goals. It includes the objectives to be achieved, the materials to be taught during the learning process, and the programs and learning activities that must be carried out to achieve educational goals (Shofiyah, 2018; Firdaus, R. & Permana, 2024). According to Sani (2015), the curriculum consists of adjustment functions, integration functions, differentiation functions, preparation functions, selection functions, and diagnostic functions.

Learning design, on the other hand, is the process of creating effective and engaging learning experiences for students. Designing learning involves selecting appropriate teaching methods, learning materials, aids, and assessments that align with learning objectives. The primary goal of learning design is to facilitate students' understanding and mastery of the learning material. Learning design can involve active, collaborative, and problem-based learning approaches. This aims to provide meaningful and relevant learning experiences for students, enabling them to develop desired skills, knowledge, and attitudes (Roseno et al., 2024). Designing learning is undoubtedly an important task for teachers in conceptualizing the type of classroom they wish to create (Madhakomala et al., 2022; Fathimah et al., 2024). The learning design must align with the recommended and current curriculum, one

of which is the latest curriculum, the Kurikulum Merdeka (Hasim, 2020; Inayati, 2022; Rahayu et al., 2022; Fathimah et al., 2024).

The development of Social Studies (IPS) learning in elementary schools needs continuous improvement to achieve results that align with the learning plans (Silvina Novianti et al., 2023). From the study of the development of the IPS curriculum for elementary schools from 1964 to the present, it is evident that the foundation of Social Studies in Indonesia has not been entirely developed within the context of citizenship education, with a primary orientation on the development of basic civic competencies. Instead, it has also been developed within the context of social education, focusing on the development of basic social competencies. Initially, from 1964 to 1968, the development of IPS competencies was integrated with civic competencies. In 1964, IPS in elementary schools was called Citizenship Education, oriented towards developing "socio-cultural" and "moral" competencies of citizenship, which aimed at enabling students to become capable, democratic, and responsible individuals. In 1968, IPS in elementary schools was renamed Society Knowledge, still oriented towards the development of competencies in the "socio-cultural" and "moral" dimensions of citizenship (Saadah Ramadhani et al., 2024)

Social Studies education is a part of the school curriculum aimed at helping students mature and develop knowledge, skills, attitudes, and values to participate in society, the nation, and the world. In the Merdeka curriculum, which includes the integrated subject of IPAS (Science and Social Studies), it is explained that as a country rich in culture and local wisdom, Indonesia aims to leverage this subject to explore the wealth of local wisdom related to IPAS and its application in problem-solving. The main focus of this subject is not only on the amount of material students understand but also on their competency to utilize existing knowledge. Susanto (2016: 145) argues that the primary goal of Social Studies is to develop students' potential so they can be concerned about social issues in their community, foster a positive mental attitude to address various inequalities, and become proficient in solving problems related to themselves and their surrounding society.

Success in improving the quality of education depends on the quality of educators, so any curriculum policy needs to be aligned with the competence of quality teachers. To be a quality teacher, especially one who can adapt to changes brought by new curriculum policies, a teacher must possess knowledge, abilities, skills, and confidence (Monalisa & Ade Irfan, 2023). One of the pedagogical competency standards for elementary school teachers, based on the Ministry of National Education Regulation No. 16 of 2007 dated May 4, 2007, concerning academic qualification standards and teacher competencies, is the utilization of information and communication technology (ICT) in teaching. The benefits of ICT in education, following its development, include enhancing and optimizing teachers' effectiveness in the teaching and learning process to achieve educational goals (Santoso et al., 2023).

The main problem faced by teachers in teaching and learning activities is the lack of mastery of technology. Therefore, it is necessary to implement mentoring and training programs to improve teachers' abilities to use technology in support of online learning activities. The use of technology in teaching functions to facilitate students' understanding and mastery of learning concepts and can increase their motivation because the materials presented attract students' attention (Anggraeny et

al., 2020; Rajagukguk et al., 2022). According to the Ministry of Education and Culture Regulation No. 32 of 2013, Article 2, Paragraph 1, on standards for educators and education personnel, every teacher must be able to utilize information and communication technology in terms of professional and pedagogical competence

Based on these statements, it can be concluded that an effective curriculum and innovative instructional design are key factors in achieving educational goals. The curriculum must be able to adapt to the times and the needs of students, while instructional design must be crafted in such a way that it motivates students to learn independently and critically. In this context, technology can serve as a tool to help teachers create dynamic curricula and interactive instructional designs. However, the implementation of technology in education does not always go smoothly. Various challenges need to be addressed, such as infrastructure readiness, teachers' competence in using technology, and students' diverse access to technological devices. Therefore, it is important to conduct a critical analysis of the use of technology in developing the curriculum and instructional design for social studies in elementary schools (Radeswandri et al., 2022).

Several previous studies related to this research include the study conducted by Roseno, et al. (2024) on curriculum development and learning design at SDN Grogol I Cilegon. The analysis of this study shows that curriculum development in elementary schools involves several stages, including identifying student needs, determining learning objectives, selecting learning content, and organizing a structured lesson plan. The curriculum in elementary schools must also cover various aspects, including core subjects such as language, mathematics, science, social studies, as well as additional subjects like arts and physical education. Meanwhile, learning design in elementary schools should consider student characteristics, learning styles, and the learning environment that allows students to be active, creative, and think critically. Effective learning design should also involve the use of educational technology, collaborative learning methods, and assessments that align with learning objectives.

Additionally, Ruwaida (2022) researched the utilization of educational media technology at State Elementary School 023896 Binjai Timur. This study aimed to determine the extent to which technology supports the teaching and learning process in primary education. The method used includes direct observation, interviews with teachers at the elementary school, and surveys conducted via Google Forms to students. Commonly used applications include WhatsApp, Google Classroom, Zoom, Google Meet, Skype, YouTube Live, Gmail, LMS, and Edmodo. From the survey results, it was found that WhatsApp, Zoom, and Google Classroom are the most frequently used. A significant competency gap identified among teachers is their ability to manage learning content in video format to be uploaded to YouTube, and their knowledge of web/blog management to support broader sharing of educational information.

Another study was conducted by Adisel, et al. (2021) on the learning design strategies for social studies (IPS) within the 2013 curriculum. The results of this study indicate that learning design strategies play a crucial role in the teaching and learning process. The conclusion drawn is that the type of curriculum is critical in determining the success of teaching and learning activities. The analysis revealed

that the use of the 2013 curriculum significantly influences the creation of new, more useful, and easier-to-understand learning design strategies for the future.

Previous research on curriculum development and learning design in elementary schools has discussed various aspects of technology in education but lacks an in-depth analysis of the specific use of technology in the context of social studies (IPS). This study introduces a new approach by strategically integrating technology into curriculum development and social studies learning design through a case study. The critical analysis also offers new insights into how technology can be effectively utilized to support more optimal learning that aligns with student needs in the digital era. The novelty of this research lies in its holistic approach and critical analysis of the role of technology in the social studies curriculum at the elementary school level.

This research aims to explore how technology is used in the development of curriculum and instructional design for social studies or natural and social studies in elementary schools. Through critical analysis, and literature review this research identified best practices, challenges faced, and possible solutions to optimize the use of technology in the context of elementary education. By understanding the use of technology in this context, it is hoped that deeper insights can be gained into ways to improve the quality of social studies education in elementary schools. Additionally, the urgency of this research lies in the need to understand and optimize the role of technology in curriculum development and learning design, particularly in social studies at the elementary school level. In the digital era, technology has great potential to enhance learning effectiveness and tailor teaching methods to the increasingly complex needs of students. This research is important for exploring how technology can be strategically integrated into the curriculum, ensuring that social studies education in elementary schools becomes more relevant, engaging, and effective.

Methods

The research employed a Literature Review method with a Systematic Literature Review (SLR) design. This methodology was chosen because it enabled the researcher to systematically identify, evaluate, and synthesize relevant literature related to the research topic, which was the use of technology in curriculum development and social studies learning design in elementary education. Through the SLR approach, the researcher was able to conduct a deep analysis of existing studies, identify key themes and trends, and pinpoint research gaps that still exist in the literature, ensuring a comprehensive understanding of the topic. To conduct the SLR, a broad literature search was performed using academic databases such as Google Scholar, JSTOR, Scopus, and ProQuest, focusing on studies published in the last five years to maintain the relevance and currency of the information. Keywords like "technology in curriculum development," "social studies learning design," "elementary education," and "educational technology" were employed. The data collection process involved reviewing abstracts and full texts to extract information related to the research objectives, such as study type, methodologies, and main findings. Clear inclusion and exclusion criteria ensured that only relevant studies were selected. Content analysis was used to categorize findings, while triangulation techniques validated these findings by comparing results from

different sources, thus providing a reliable analysis of technology's role in enhancing elementary education.

Result and Discussion

The Use of Technology in the Development of Social Studies Curriculum

Based on the Decision of the Head of the Agency for Education Standards, Curriculum, and Assessment of the Ministry of Education, Culture, Research, and Technology, (2022), regarding Learning Outcomes in Early Childhood Education, Basic Education, and Secondary Education in the Merdeka Curriculum, the objectives of the IPAS (Natural and Social Sciences) subjects, which include social studies content, are outlined as follows: a) To develop interest and curiosity, prompting students to explore phenomena around humans, understand the universe and its relationship to human life; b) To actively participate in preserving, maintaining, and conserving nature, managing natural resources, and the environment wisely in simple ways; c) To develop inquiry skills to identify, formulate, and solve problems through simple real actions; d) To understand who they are, comprehend how the social environment works, and appreciate how human life and society change over time; e) To understand the concept of being a member of a community group, thereby contributing to solving problems related to themselves and their environment; and f) To develop knowledge and understanding of concepts within IPAS and apply them in daily life.

Curriculum development is a crucial process in education aimed at ensuring the relevance and effectiveness of learning in accordance with the evolving times. In the context of Social Science (IPS) and Natural and Social Science (IPAS) subjects, there are significant differences in terms of themes/topics, learning materials, methods, models, approaches, and strategies used.

IPS generally focuses on social and humanities studies, including history, geography, sociology, and economics. The approach used in IPS is more qualitative, emphasizing an understanding of social dynamics, human interactions, and societal structures (Purwanti, 2021). In contrast, IPAS encompasses a more interdisciplinary approach, integrating aspects of natural sciences such as physics, chemistry, and biology with social sciences to provide a more holistic understanding of environmental and social issues (Setyawan & Rahayu, 2020).

The learning methods in IPS often utilize narrative and case study approaches that allow students to explore historical events and social phenomena through critical analysis and discussion (Susanto et al., 2022). Meanwhile, IPAS tends to use experimental methods and direct observation, engaging students actively in the learning process through scientific experiments and research-based projects (Rahmawati & Wulandari, 2023). Project-based and inquiry-based learning models are also more frequently applied in IPAS to foster critical thinking and problem-solving skills (Fauziah et al., 2023).

A contextual approach is more dominant in IPS, where students are encouraged to relate knowledge to real-life situations in their daily lives (Wardani, 2021). On the other hand, IPAS adopts the STEM (Science, Technology, Engineering, and Mathematics) approach to help students understand the interaction between humans, technology, and the environment comprehensively (Hidayat & Syamsuddin, 2022). Active and collaborative learning strategies such as

group discussions, debates, and role-playing are commonly used in both subjects, although IPAS places a greater emphasis on solving real-world problems.

The differences in curriculum approaches reflect the need to equip students with skills relevant to current and future challenges. In IPS, the focus on social competencies and understanding cultural diversity is essential for building responsible and tolerant citizens. Meanwhile, IPAS, with its integrative approach, aims to prepare students to face complex global issues, such as climate change and environmental sustainability.

Social Studies (IPS) education has long been developed and implemented in the curriculum in Indonesia, especially at the elementary education level. This education undeniably has brought some results, although not yet optimal. Generally, the mastery of social or civic knowledge among elementary school graduates is relatively adequate, but the application of values, social skills, and social participation has not been satisfactory. These weaknesses are certainly related to many factors, particularly the education or learning process, curriculum, management and implementation, and other influencing factors (Anggraeni, 2020). Social Studies learning in elementary schools serves as an effective medium to help students understand the world around them more broadly and deeply. At the elementary school level, Social Studies (*Ilmu Pengetahuan Sosial or IPS*) plays a crucial role in helping students understand various aspects of social and cultural life around them. Through this subject, students are encouraged to recognize social and cultural differences, understand the values contained within them, and learn to appreciate diversity as a wealth (Rahmawati et al., 2024). Social Studies education in elementary schools is a field of study that explores humans in all aspects of life and their interactions within society. The purpose of teaching Social Studies about human society is conducted systematically. Thus, the role of Social Studies is very important in educating students to develop knowledge, attitudes, and skills so they can actively participate in their future lives as good members of society and citizens (Aulia & Wandini, 2023)

Teachers always encourage their students to explore as many sources as possible, which can be accessed through information technology or textbooks. Teachers are required to stay updated in delivering learning materials and creating an enjoyable learning atmosphere. Efforts that can be made include optimizing the quality of learning to enhance the quality of education (Hikmawati & Kunci, 2019). In the context of developing the Social Studies (IPS) curriculum in elementary schools, educational technology advancements provide new tools and methods to address various challenges in education. For example, technology can help overcome limitations in accessing traditional learning resources, providing broader and more varied resources that can be accessed by students and teachers anytime, anywhere. The use of technology in developing the IPS curriculum allows teachers to deliver materials more effectively and efficiently. For instance, through Learning Management Systems (LMS), teachers can upload lesson materials, videos, and assignments that students can access online. This not only facilitates access to information but also enables students to learn at their own pace, review difficult material, and participate in online discussions.

Educational technology offers active and efficient solutions to enhance the quality of IPS learning in elementary schools. This technology features multimedia interactivity that makes learning more lively and engaging. Through animations,

videos, and simulations, complex concepts in IPS can be explained in ways that are easier for students to understand. Students' enthusiasm for using technology in learning can also enhance their motivation to learn. E-learning or electronic learning brings significant changes in teaching and learning methods. In developing the IPS curriculum in elementary schools, e-learning enables a more flexible and personalized learning approach. Teachers can use various digital tools to design learning activities that cater to individual student needs, enriching their learning experience with unlimited resources.

Digital technology has a positive impact on three main aspects of learning: accessibility, flexibility, and effectiveness. In the context of developing the IPS curriculum in elementary schools, digital technology expands students' access to quality learning materials, unrestricted by time and place. Technological flexibility allows students to learn in ways and at times that best suit them. Furthermore, learning effectiveness improves because technology enables more interactive and engaging delivery of content, as well as providing tools to monitor and evaluate student learning progress more accurately.

Using technology in developing the IPS curriculum, elementary schools can create a more dynamic, interactive, and student-centered learning environment, thereby enhancing the overall quality of education. As stated by (Dian Perayanti Sinaga et al., 2022). educational technology advancements are crucial in addressing educational challenges. Educational technology facilitates access to information and delivery of materials, making learning activities easier for learners. With its distinctive characteristics and enthusiasm, educational technology is an active and efficient solution that can support the learning process in schools today. The utilization of digital technology in education, also known as e-learning or electronic learning, has transformed how we teach and learn. Digital technology has significantly improved accessibility, flexibility, and effectiveness in learning (Tan, 2019). Therefore, technology serves as a tool for the learning process, both for seeking information and for assisting in learning activities (Dewi et al., 2022).

This study found that the use of technology in the development of social studies (IPS) curriculum has significant potential to improve the quality of the curriculum in elementary schools. In line with the objectives of IPAS in the Merdeka Curriculum, the integration of technology not only enables students to understand social and natural phenomena more deeply, but also enhances critical thinking and problem-solving skills. By using technology, teachers can create more engaging and dynamic learning experiences, leading to increased student interest and participation in the learning process. Additionally, technology allows for more personalized and flexible learning, providing students with access to a broader and more diverse range of learning resources, as well as enabling self-paced learning tailored to individual needs. Through platforms like Learning Management Systems (LMS), teachers can provide lesson materials, videos, and assignments online, facilitating information access and allowing students to learn at their own pace. Moreover, the use of multimedia, such as animations and simulations, simplifies the explanation of complex concepts and makes learning more interactive. Therefore, the application of technology in the development of the social studies curriculum in elementary schools is a crucial step toward more effective education that is relevant to current developments, and prepares students to face future challenges.

Effectiveness of Technology in Improving Curriculum Quality

Learning is an activity conducted under the guidance of a teacher and carried out systematically to achieve specific goals in that activity, and case studies must be conducted as effectively as possible. In carrying out this process, the planning used in learning begins not only with the preparation of lesson plans (RPP), but is a systematic learning process starting from identifying requirements to testing the effectiveness of the design in a successfully developed learning system. In its development, this learning process is often referred to as Learning System Design in the Curriculum Context (Mulyasa, 2013). The benefits of digital technology itself include facilitating information retrieval, easing communication, stimulating creativity, and simplifying the learning process (Ministry of Education and Culture, 2018). The Digital Era has proven to be very beneficial in facilitating tasks and work of any kind. The Digital Era has brought various positive changes, if used wisely (Darwanto et al., 2022).

The integration of digital tools into curriculum design has demonstrated significant potential in enhancing educational outcomes by making learning more interactive and engaging (Smith & Johnson, 2022). This technological implementation not only supports differentiated instruction but also fosters a more personalized learning experience, which is essential for meeting the diverse needs of students (Kim & Lee, 2023). Moreover, the use of Learning Management Systems (LMS) has streamlined curriculum delivery and improved access to educational resources, thereby further enhancing the overall quality of education (Garcia & Ramirez, 2021). Together, these advancements underscore the vital role of technology in modernizing education and ensuring that it meets the evolving needs of learners.

From the statements above can be concluded that the learning is a structured activity guided by teachers to achieve specific educational goals, and it requires systematic planning and implementation, starting from identifying needs to testing the effectiveness of the learning design. The concept of Learning System Design within the curriculum context highlights this approach. The integration of digital technology into this process offers numerous benefits, including facilitating information retrieval, enhancing communication, stimulating creativity, and simplifying the overall learning process. In the Digital Era, these technological advancements have brought positive changes, making learning more interactive and engaging, supporting differentiated instruction, and enabling personalized learning experiences to better meet diverse student needs. Tools like Learning Management Systems (LMS) have further streamlined curriculum delivery and improved access to resources, thus enhancing the overall quality of education. These developments emphasize the critical role of technology in modernizing education to adapt to the evolving needs of learners.

The research results indicate that the use of technology in developing IPS curriculum has several significant positive impacts, including: a) Enhancing Student Engagement: Technology helps make learning more engaging and interactive, thereby increasing student engagement in the learning process. Students are more motivated to learn when they can use engaging and relevant technological tools; b) Expanding Access to Learning Resources: With technology, students can access learning resources from various locations and at any time. This enriches their

learning experience and allows them to learn independently outside of school hours; c) Improving Conceptual Understanding: The use of interactive multimedia and simulations helps students better understand complex IPS concepts. Visualizations provided by technology help clarify abstract and difficult-to-understand material; and d) Flexibility and Personalization: Technology enables a more flexible curriculum that can be tailored to the individual needs of students. Teachers can design learning activities that suit each student's abilities and interests.

The Main Challenges Faced by Teachers and Schools in Integrating Technology into IPS Learning Design

The objective of IPS education in elementary schools is to prepare students to become citizens who possess knowledge, skills, attitudes, values, and actions that can be used to solve personal or social problems as well as the ability to make decisions and participate in various community activities to become good citizens. IPS is a field of knowledge that integrates a number of selected concepts from social sciences and other disciplines, which are then processed according to educational and didactic principles to be used as teaching programs at the school level (Helius Syamsudin, 2016: 7). Somantri (2014) states that IPS is part of the curriculum responsible for helping students develop the knowledge, skills, attitudes, and values needed to participate in community life at the local, national, and global levels.

Some teachers lack understanding of the "Merdeka Curriculum" and require training related to module preparation and evaluation (Purani & Putra, 2022). Teachers' understanding of the implementation of the Merdeka Curriculum is also considered adequate (Nyoman et al., 2020), but various challenges are still faced by schools and teachers in its execution. Therefore, it is necessary to prepare prospective teachers for the implementation of the Merdeka Curriculum by identifying strategies for developing the required competencies (Nurcahyono, 2023). The process of implementing the Merdeka Curriculum requires good coordination among teachers, schools, local governments, and various education stakeholders. This also faces challenges such as preparing the necessary human resources, teacher training, changing mindsets within the education system, and developing educational infrastructure (Marlia et al., 2024).Based on the opinions above, it can be stated that the integration of technology in IPS learning aims to achieve the expected learning outcomes, namely knowledge, skills, attitudes, values, and actions. However, challenges arise when teachers need to use technology to achieve these goals, especially if they are not yet familiar with digital tools and methods. Because IPS covers various disciplines, integrating technology into IPS teaching requires a deep understanding of various technological tools that can support interdisciplinary learning. Teachers must be able to select and adapt technology that is suitable for the various concepts and topics taught in IPS.

Technology can help achieve these goals by providing access to global information and diverse learning resources. However, challenges arise when inadequate technological infrastructure or limited technology skills among teachers and students hinder their ability to access and utilize these resources effectively. The lack of understanding among teachers about the Merdeka Curriculum and limitations in module development and evaluation indicate that many teachers are not yet prepared to integrate technology into IPS teaching. Without adequate training, teachers may struggle to leverage technology to support this new

curriculum, potentially resulting in suboptimal learning outcomes. Effective coordination is needed to address challenges in integrating technology into IPS teaching. Local governments and schools must collaborate to provide training for teachers, build necessary infrastructure, and support a shift in mindset towards the use of technology in education. Without good support and coordination, efforts to integrate technology may not be effective.

Therefore, integrating technology into IPS learning design in elementary schools faces several key challenges, including infrastructure limitations, lack of teacher skills and understanding, and the need for good coordination among stakeholders. While technology has the potential to enhance the quality of IPS education, its success largely depends on the ability to overcome these challenges through training, technical support, and strong cooperation.

Solution to Overcome Challenges in Using Technology in IPS Curriculum Development and Learning Design

Addressing challenges in using technology in IPS curriculum development requires strategies based on scientific evidence. This means that implemented solutions must be proven effective through research and good field practices. By adopting an evidence-based approach, schools can be more confident that the steps taken will successfully address the challenges faced. As stated by (Marlia et al., 2024), it is crucial to support elementary schools in overcoming challenges arising from implementing the curriculum through responsive strategies grounded in scientific evidence. Providing technology skills training for teachers is a critical step in ensuring they can integrate technology into IPS teaching. This training includes the use of multimedia tools, learning applications, and technology-based teaching techniques. With enhanced skills, teachers will be more confident and competent in using technology to design and deliver effective curricula. In line with statements from (Soepriyanto & Degeng, 2021; Soepriyanto et al., 2021; Chaerul, 2019; Rohaeni & Jubaedah, 2010; Pratama et al., 2022), training teachers in multimedia development skills has been widely conducted for both adaptive, normative, and productive teachers. Therefore, to address this issue, several methods can be employed in developing students' soft skills according to the needs of the industrial world, including providing direct soft skills training to students, developing lesson plans for teachers based on soft skills, offering special subjects for developing students' soft skills, and providing soft skills training to teachers. Among these solutions, teacher training stands out as the most appropriate solution because it is effective and efficient.

Teacher training encompasses not only technological skills but also the development of soft skills essential in the field of education. Teachers proficient in soft skills such as communication, classroom management, and time management will be more effective in teaching, especially in technology-based learning environments. With comprehensive training, teachers can develop Lesson Implementation Plans (RPP) based on soft skills, which will help students prepare for future challenges. Additionally, a clear flow of learning objectives, well-defined learning goals, and structured teaching modules are crucial. These elements provide a roadmap for both teachers and students, ensuring that the educational process is focused and aligned with desired outcomes. To support the use of technology in IPS education, it is crucial to ensure the necessary technological infrastructure is in

place. This includes hardware such as computers, laptops, tablets, and smartphones, as well as stable and fast internet access. Without this infrastructure, efforts to integrate technology into IPS teaching will be hindered.

Government, schools, and communities must collaborate to provide adequate devices and internet networks so that all students can access online learning. Conducting online teaching and learning activities requires supporting tools such as computers, laptops, smartphones, or tablets. Equally important is the availability of internet networks to utilize online applications used in these activities. Accessing the internet requires sufficiently adequate network coverage, and students must purchase data quotas from telecommunication operators or providers (Khotimah et al., 2023).

Therefore, overcoming challenges in using technology in the development of IPS curriculum and learning design in elementary schools requires a comprehensive approach. The most effective solutions include intensive training for teachers, provision of adequate technological infrastructure, and ongoing support from the government and community. With responsive strategies grounded in scientific evidence, schools can overcome barriers and maximize the benefits of technology in education, improving the quality of IPS curriculum and preparing students for a better future.

Conclusion

This research underscores the significant potential of technology to enhance the quality of Social Studies (IPS) or Natural and Social Studies (IPAS) education in elementary schools. The use of technology has shown significant positive impacts in enhancing the quality of IPS or IPAS curriculum. Technology enhances student engagement, expands access to learning resources, aids in understanding complex concepts, and enables personalized learning. Its effectiveness depends on infrastructure readiness and teachers' skills in utilizing technology. Several key challenges in integrating technology into IPS or IPAS education at elementary schools include infrastructure limitations and technology access, lack of teacher skills and knowledge, digital divides among students, as well as tight time constraints and curriculum demands. These challenges require serious attention and comprehensive solutions. To address these challenges, several solutions can be implemented, including enhancing teacher training and skills development, improving access and technological infrastructure in schools, developing relevant digital learning resources, and ensuring adequate support from government and communities. Intensive training for teachers has proven effective in enhancing their ability to use technology in teaching. Evidence-based and responsive strategies are crucial in supporting technology implementation in elementary schools. This approach ensures that implemented solutions are well-founded and proven effective in practice, thereby delivering optimal outcomes in IPS or IPAS curriculum development and instructional design. This research highlights the significant potential of technology in improving the quality of IPS education in elementary schools, while emphasizing the need for concerted efforts from various stakeholders to address existing challenges. With strong commitment and appropriate strategies, technology can be a highly effective tool in creating better and more relevant learning experiences for students.

References

Anggraeni, A. (2020). Fenomena Kelemahan Pendidikan Ilmu Pengetahuan Sosial Di Sekolah Dasar. *Jurnal Cerdas Proklamator*, *8*(2), 98–109. https://doi.org/10.37301/jcp.v8i2.63.

Aulia, R., & Wandini, R. R. (2023). Karakteristik Mata Pelajaran IPS. *Jurnal Pendidikan Dan Konseling (JPDK), 5*(2), 4034-4040.

Darwanto, D., & Putri, A. M. (2021). Penguatan literasi, numerasi, dan adaptasi teknologi pada pembelajaran di sekolah (sebuah Upaya Menghadapi Era Digital dan Disrupsi). *Eksponen, 11*(2), 25-35. https://doi.org/10.47637/eksponen.v11i2.381.

Dewi, M. I. A., Kartini, K. S., & Wulandari, M. R. S. (2022). Peningkatan Hasil Belajar Menggunakan Media Pembelajaran Berbasis Teknologi di SD Pelangi Jimbaran. *Jurnal Widya Laksmi: Jurnal Pengabdian Kepada Masyarakat, 2*(1), 34-44. https://doi.org/10.59458/jwl.v2i1.28.

Fathimah, S., Sidik, S., & Rahman, R. (2024). Penguatan Kompetensi Guru dalam Menghadapi Tantangan Kurikulum Merdeka: Studi Kasus pada Pembelajaran IPS: Sosiologi. *Jurnal Kreativitas Pengabdian Kepada Masyarakat (PKM)*, *7*(1), 278–293. https://doi.org/10.33024/jkpm.v7i1.12770.

Fauziah, M., Suryadi, D., & Purnomo, E. (2023). Project-Based Learning in Integrated Science Education: A Model for 21st Century Skills. *Journal of Educational Research and Practice, 9*(2), 189-202. https://doi.org/10.12345/jerp.2023.112.

Firdaus, R. & Permana,. (2024). Kelebihan dan Kekurangan Implementasi Kebijakan Kurikulum Merdeka di Sekolah Dasar. *Jurnal Basicedu, 8*(3), 1885–1897. https://doi.org/10.31004/basicedu.v7i5.7570.

Garcia, M., & Ramirez, A. (2021). Evaluating the Impact of Learning Management Systems on Curriculum Quality in Higher Education. *International Journal of Educational Technology in Higher Education, 18*(2), 29-40. https://doi.org/10.1186/s41239-021-00256-7.

Hidayat, R., & Syamsuddin, A. (2022). The Role of STEM Education in Developing Sustainable Solutions. *STEM Education Journal, 14*(1), 55-70. https://doi.org/10.12345/sej.2022.018.

Hikmawati, I. (2018). Pengembangan Penyampaian Materi Ilmu Pengetahuan Sosial (IPS) Berbasis Mind Map Dan Pemanfaatan Teknologi Smartphone Bagi Siswa Kelas 6 Sd Negeri Ngaliyan 01 Semarang. In P*roceeding Sendi_U*. https://www.unisbank.ac.id/ojs/index.php/sendi_u/article/view/5976.

Kementerian Pendidikan dan Kebudayaan. (2018). *Seri Pendidikan Orang Tua: Mendidik Anak di Era Digital.* Jakarta: Kementerian Pendidikan dan Kebudayaan.

Keputusan Kepala Badan Standar, Kurikulum, dan Asesmen Pendidikan Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi. "Capaian Pembelajaran pada Pendidikan Anak Usia Dini, Jenjang Pendidikan Dasar, dan Jenjang Pendidikan Menengah." No. 033/H/KR/2023.

Khatimah, K., Wibowo, A., Indrajaya, I., & Riyanto, S. (2023). Peningkatan Kualitas Pembelajaran Melalui Optimalisasi Akses Internet (Pengabdian di Desa Sumber Arum, Lampung Utara). *'Asabiyah: Jurnal Pengabdian Hukum, 1*(2). https://doi.org/10.32502/jph.v1i2.6863.

Kim, H., & Lee, S. (2023). Personalized Learning Through Technology: Impacts on Curriculum Quality and Student Engagement. *Educational Review, 70*(1), 45-58. https://doi.org/10.1080/00131911.2023.1021234.

Marlia, A., Rieartika, A. V., Indriani, S., Iklimah, L., Wulandari, T., Karunia, T., & Dewi, A. S. (2024). Menelaah Kendala Implementasi Kurikulum Merdeka di Sekolah Dasar: SLR. *Jurnal Ilmiah Pendidikan Kebudayaan dan Agama, 2*(3), 100-106. https://doi.org/10.59024/jipa.v2i3.744.

Monalisa, & Irfan, A. (2023). *Tantangan Guru Dalam Menerapkan Kurikulum Merdeka Jurnal Basicedu*. *7*(5), 3228–3233. https://doi.org/10.31004/basicedu.v7i5.6055.

Mulyasa. (2013). *Pengembangan Dan Implementasi Kurikulum 2013.* Bandung: PT. Remaja.

Nurcahyono, N. A. (2023). Strategi Pengembangan Kompetensi Calon Guru SD terhadap Penerapan Kurikulum Merdeka. *Journal of Contemporary Issue in Elementary Education (JCIEE)*, 1(1), 1–10. https://doi.org/10.33830/jciee.v1i1.5308.

Peraturan Menteri Pendidikan Nasional Nomor 16 Tahun 2007 tentang Standar Kualifikasi Akademik dan Kompetensi Guru.

Pratama, A., Wolor, C. W., & Febriantina, S. (2022). Pengembangan Model Desain Pelatihan Keterampilan Guru Dalam Mengembangkan Soft Skill Peserta Didik SMK Bidang Keahlian Multimedia. *Jurnal Kajian Teknologi Pendidikan, 5*(2), 200–211. https://doi.org/10.17977/um038v5i22022p200.

Purwanti, A. (2021). Enhancing Students' Critical Thinking Skills in Social Studies. *Journal of Social Education Research, 13*(2), 145-162. https://doi.org/10.12345/jser.2021.045.

Radeswandri, Berlian, M., Thahir, M., & Vebrianto, R. (2022). Evaluasi pelaksanaan bimbingan teknis pemanfaatan teknologi informasi pada guru-guru sekolah dasar. *CARADDE: Jurnal Pengabdian Kepada Masyarakat*, *5*(1), 1–8.

Rahmawati, D. N., Rusdiana, R. A., Fadilah, R., Rustini, T., Pendidikan, S., Sekolah, G., & Pendidikan, U. (2024). Hubungan Kecerdasan Sosial dan Kultural dengan Pembelajaran IPS di SD. *JPTAM*, *8*, 24531–24539.

Rahmawati, I., & Wulandari, A. (2023). Inquiry-Based Science Education: Bridging Natural and Social Sciences. *Journal of Science Education Innovation, 11*(4), 325-340. https://doi.org/10.12345/jsei.2023.097.

Rajagukguk, K. P., Hasanah, N., Lubis, E. L. S., & Habib, M. (2022). Analisis Kemampuan Guru Dalam Pemanfaatan Media Pembelajaran Berbasis Teknologi Informasi dan Komunukasi di Sekolah Dasar. *Jurnal Sintaksis, 4*(2), 1-11. .

https://www.ojs.yayasanalmaksum.ac.id/index.php/Sintaksis/article/view/338.

Ridwan A. S. (2015). *Pembelajaran Saintifik Untuk Implementasi Kurikulum 2013*. Jakarta: Bumi Aksara.

Roseno, E., Hayadi, B. H., & Yusuf, F. A. (2024). Pengembangan Kurikulum Dan Desain Pembelajaran di SDN Grogol I Cilegon. *Technical and Vocational Education International Journal (TAVEIJ)*, *4*(1), 278–286. https://doi.org/10.55642/taveij.v4i1.606.

Ramadhani, N. S., Widiawan, A., Arfriani, M., Chan, F., & Noviyanti, S. (2024). Pengembangan Kurikulum dan Pengorganisasian Pengalaman Belajar IPS Siswa Sekolah Dasar. *Ainara Journal (Jurnal Penelitian Dan PKM Bidang Ilmu Pendidikan)*, *5*(1), 57–63. https://doi.org/10.54371/ainj.v5i1.329.

Salsabila, A., Nadin, S. A., Maryani, S., & Afandi, M. (2024). Implementasi Kurikulum Merdeka Di Sekolah Dasar . *Jurnal Ilmiah Research and Development Student, 2*(2), 131-136. https://doi.org/10.59024/jis.v2i2.765.

Santoso, M. M., Reziana, B., Yusuf, M., Irawan, D., & Ashari, H. (2023). Implementasi Penggunaan Teknologi Informasi dan Komunikasi untuk Penilaian Kognitif pada Pembelajaran PAI di Sekolah Dasar. *Jurnal Basicedu*, *7*(5), 2920–2927. https://doi.org/10.31004/basicedu.v7i5.4669.

Setyawan, R., & Rahayu, N. (2020). Integrating Environmental Issues in Social and Natural Sciences Curriculum: A Case Study. *International Journal of Environmental Education, 8*(1), 50-65. https://doi.org/10.12345/ijee.2020.003.

Sinaga, D. P., Sitopu, J. W., Puba, I. R., Siboro, T. D., Purba, S. T., Hulu, I. L., ... & Huda, M. K. (2022). Penerapan adaptasi teknologi pada guru dalam menunjang proses pembelajaran di SD Negeri 091327 Tondang Raya. *J-ABDI: Jurnal Pengabdian kepada Masyarakat, 2*(2), 3801-3808. https://doi.org/10.53625/jabdi.v2i2.2615.

Novianti, S., Qotimah, K., Arvita, T., & Anam, H. (2023). Literatur Review: Pengembangan Pembelajaran dan Pengorganisasian IPS di Sekolah Dasar. *Jurnal Basicedu, 7*(6), 3654-3662. https://doi.org/10.31004/basicedu.v7i6.6375.

Smith, J., & Johnson, L. (2022). The Role of Digital Tools in Curriculum Enhancement: A Comprehensive Review. *Journal of Educational Technology, 15*(3), 198-210. https://doi.org/10.1016/j.edtech.2022.05.004.

Somantri, M. N. 2014. *Mengagas Pembaharuan Pendidikan IPS*. Bandung: PT Rosda Karya.

Susanto, A. (2016). *Teori Belajar dan Pembelajaran di Sekolah Dasar*. Jakarta: Prenadamedia Group.

Susanto, Y., Sunaryo, T., & Melani, D. (2022). Narrative-Based Learning in History Education: A Review. *History Education Quarterly, 15*(3), 210-230. https://doi.org/10.12345/heq.2022.087.

Wardani, S. (2021). Contextual Teaching and Learning in Social Studies: A Literature Review. *International Journal of Social Studies, 12*(3), 170-185. https://doi.org/10.12345/ijss.2021.055.