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Global Learning Transformation in Primary Education: A Systematic Review of Digital Policy and Access Enhancement

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Abstract: The digital revolution has encouraged the acceleration of digital transformation in the education sector, including at the elementary school level. This transformation requires policy adaptation to integrate technology effectively into the learning process. This study aims to analyze the literature that puts forward the digital policies implemented in primary schools globally, the impact on increasing access to digital education, and what factors affect the successful implementation of the policy. This article fills a gap in the literature that previously focused on learning outcomes without considering accessibility and equity. This article uses the Systematic Literature Review (SLR) approach using the PRISMA procedure from 2015 to 2024. From various stages of exclusion, 52 articles were found in the Scopus database that followed the inclusion criteria and used the help of the VOSviewer application. The results of the analysis show that global digital policies in primary schools have a significant impact on increasing access to digital education. Approaches such as improved infrastructure, teacher training, and technology-based curricula have improved the quality of learning and reduced the digital divide. Increased access to digital learning has significantly impacted education systems in various countries. Success factors include government policies, technological infrastructure, educator capacity, user acceptance, and socio-economic support.
Keywords: Digital Learning Policy, Digital Access Enhancement, Primary Education, Systematic Review, Global Learning Transformation.

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A. Introduction

The digital revolution has fundamentally changed the global education landscape, creating a new paradigm in the learning process at the primary school level (Sangodiah et al., 2023). The acceleration of digital transformation triggered by the COVID-19 pandemic has presented an unprecedented urgency to integrate digital technology into the education system (Hasanah et al., 2024). This phenomenon is changing how learning is delivered, prompting reforming education policies in different countries to accommodate this new reality (Šramová & Pavelka, 2023). In developed countries, digital transformation in basic education has significantly impacted learning outcomes. A study in Finland showed that the systematic integration of digital

technologies in primary schools increased student engagement by 45% and conceptual understanding by 38% (Kirchner, 2024). Meanwhile, research in Singapore revealed that the implementation of comprehensive digital policies has contributed to an improvement in students' critical thinking skills by 32% in two years (Chia et al., 2019)

However, the digital divide between developed and developing countries remains the focus of studies in various literature. A study from Afzal et al., (2023) revealed that only 34% of primary schools in developing countries have adequate internet access for digital learning, while other literature highlights the limitations of human resources and infrastructure as significant challenges in the adoption of digital policies in primary education (Quaicoe & Pata, 2018). This literature review highlights that many articles discussing digital policy often lack a holistic approach that includes infrastructure, teacher training, and overall digital content development (Kjällander et al., 2021). Analysis by Ruloff & Petko, (2021) identified that related articles are still limited in exploring key pillars of success, such as adaptive policies, the development of educators' digital competencies, and the relevance of digital infrastructure.

In addition, the literature shows that research on digital policies often focuses on positive impacts, such as improving equitable access and quality of education. However, there is still a lack of critical studies on the variables that affect the effectiveness of these policies, both in developed and developing countries. For example, Nogueira et al., (2022) documented the success of digitalization programs in Brazilian rural schools, but similar studies often lack discussion of implementation constraints at the operational level. The same thing can be seen in a study (Remillard et al., 2021) where the success of digital policies is highlighted, but there is still limited discussion of theoretical or conceptual challenges in research related to these policies. Thus, this study focuses on problems in the literature containing digital policies, such as the lack of exploration of policy challenges conceptually or methodologically, rather than simply highlighting policy practices on the ground. This approach aims to fill gaps in the literature by providing a critical analysis of existing research weaknesses so that it can contribute to the development of more comprehensive evidence-based digital policies.

However, although various studies have examined the impact of digital policies at the national level, comprehensive analyses that integrate policy aspects and improve access in a global context are still limited. This gap is becoming increasingly important, given the need for a deeper understanding of the effectiveness of digital policies in transforming global learning. Several significant gaps have been identified in the existing literature. The study by Chauhan (2017) uses a meta-analysis approach to examine the impact of digital policies but only focuses on learning outcomes without considering access and equity aspects. Furthermore, Picka et al. (2022) only conducted a study on teachers' experiences with digital learning in Czech elementary schools. The study did not consider variations in implementation in different countries. A further study from Denys and Klimczuk (2023) this literature review explains the feasibility of

digital learning in developed countries but does not analyze its success in developing countries.

For this reason, this study is interesting to discuss because it integrates digital policy analysis with aspects of comprehensively improving access, links policy formulation with the impact of implementation on the learning process, considers contextual factors that affect the success of implementation and analyzes the long-term impact of digital policies on educational equity. This study aims to analyze the literature that puts forward the digital policies implemented in primary schools globally, the impact on increasing access to digital education, and what factors affect the successful implementation of the policy.

B. Method

Systematic Literature Review

Systematic Literature Review (SLR) is conducted as a methodological approach to provide a reliable assessment in filtering empirical evidence related to the impact of digital policies on the accessibility of basic education. This method was chosen according to the theory of Kitchenham, (2004) who designed an SLR framework to assess and synthesize research systematically. This approach is relevant because it identifies key factors influencing the success or failure of digital policies in primary education, as well as uncovering the potential for future research to adopt or adapt such policies to improve access to primary education. The article's selection of the SLR method is driven by the need to answer the gap in the literature, where there has not been much comprehensive synthesis regarding the impact of digital policies on basic education. This article refers to PRISMA, which has been widely applied in educational research, such as those developed by Moher et al, (20015) and current guidelines in the field of basic education. Using this approach, the research can present transparency and rigor in the selection, synthesis, and reporting of literature so that it is relevant to the context of basic education research, which is the main focus. Figure 1 will explain the stage of PRISMA.

The search criteria are based on research questions to determine which articles to include or exclude from the analysis. This study uses search keywords (digital OR technology AND policy OR educational AND policy OR transformation AND policy AND education) AND in AND (elementary AND education OR primary AND education). Literature eligibility is tied to those published in English from 2015 to 2024.

The database used in this study is a database from Scopus. This database was chosen because it is a source often used for data collection in systematic reviews. From the search on the database from Scopus, 818 articles with titles, abstracts, and keywords were produced. The collected articles were checked for duplicates of 17 and 387 without full text. The full text of 414 was excluded as many as 224 because it did not match the title, and the report was not taken by 86 because the research was not in

elementary school. The collected articles were further examined and assessed for eligibility based on the eligibility criteria, as shown in Table 1.

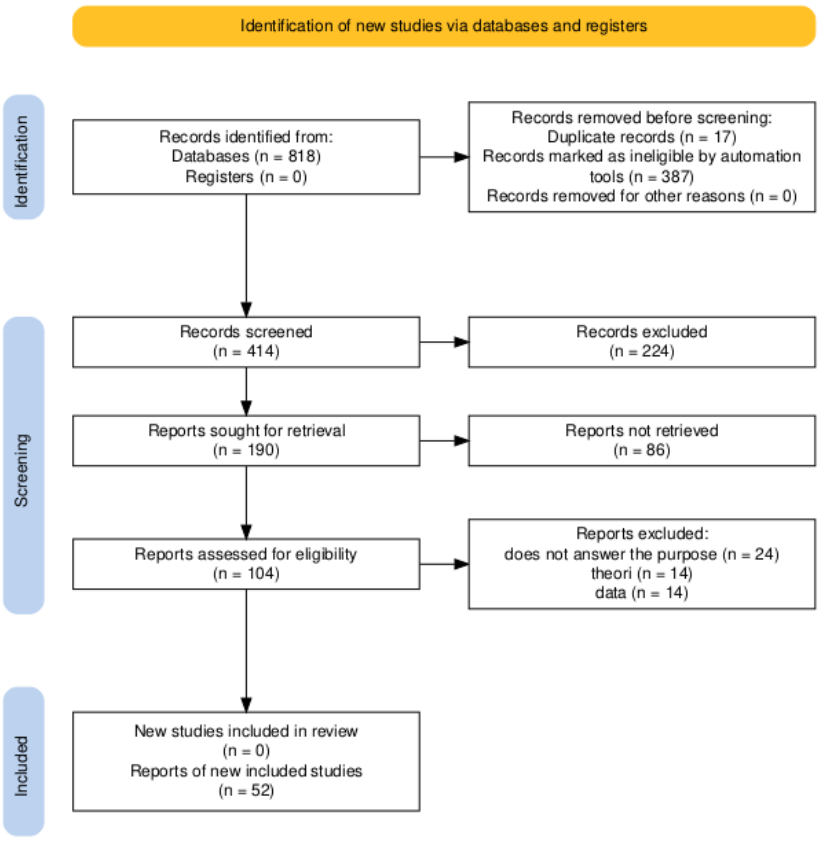

Figure 1. SLR Stage Flow Diagram

Table 1. The article includes and excludes criteria

Article Includes Criteria	Article Excludes Criteria
The article answers one of the purpose of the paper	Articles that do not answer the purpose
The article provides theories that support the literature review	The theory in the article is not appropriate
The article explains the data needed	The article does not explain the data required

Literature not meeting the eligibility criteria was excluded, and 52 articles were used for further analysis. Literature is read, coded, and checked for consistency. Each publication is further categorized based on methodology and the country of the first Author institution. The research methodology includes qualitative, quantitative, and mixed methods. The collected articles are synthesized to answer the research question.

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author's institution. The research methodology includes qualitative, quantitative, and mixed methods. The collected articles are synthesized to answer the research objectives.

C. Results and Discussion

Profile Analysis

From the results of the analysis of 52 articles that have met the eligibility criteria, trend data was obtained from the year of publication of articles on digital learning transformation policies along with increasing access in elementary schools. The following data results were obtained: in 2015, 2018, and 2019, there was only 1 article, while in 2022, it increased to 7 articles; in 2023, it increased to 12 articles, and in 2024, it became 26 articles. An overview of the distribution of articles based on the year of publication will be explained in Figure 2.

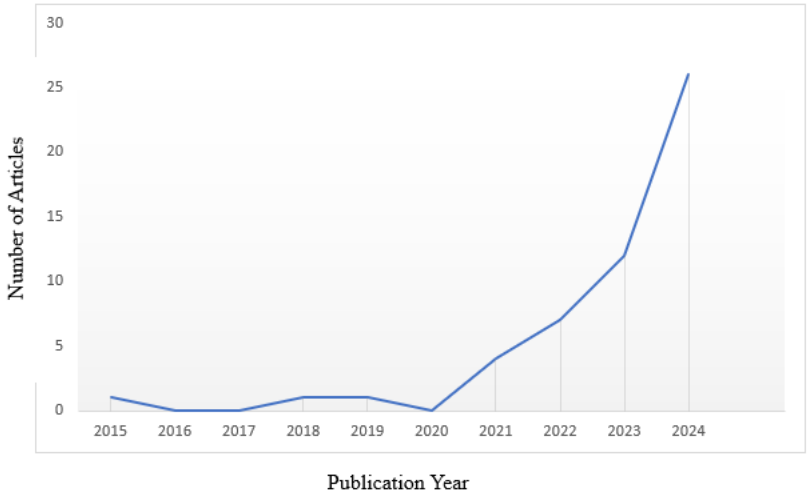

Figure 2. Temporal Distribution of Articles Collected by Year of Publication

The following data were found for the number of articles based on the research method: the qualitative method had as many as 26 articles, the quantitative method had as many as 21 articles, and the mixed method had as many as five articles. The distribution of articles based on research methods will be explained in Figure 3.

Judging from the countries where this study is conducted, there are 26 countries with the most countries: Indonesia with seven articles, then China as many as six articles, the United States and Spain with as many as four articles, South Korea and Sweden as many as three articles, Finland, Vietnam, Czech, Kenya, Taiwan, Canada as many as two articles. Meanwhile, there is only one article from Egypt, Brazil, the Republic of Cyprus, Jordan, Chile, Mexico, Russia, Ghana, Ukraine, South Africa, Cambodia, Malaysia, Portugal, and Switzerland. An overview of the distribution of articles based on the research country will be explained in Figure 4.

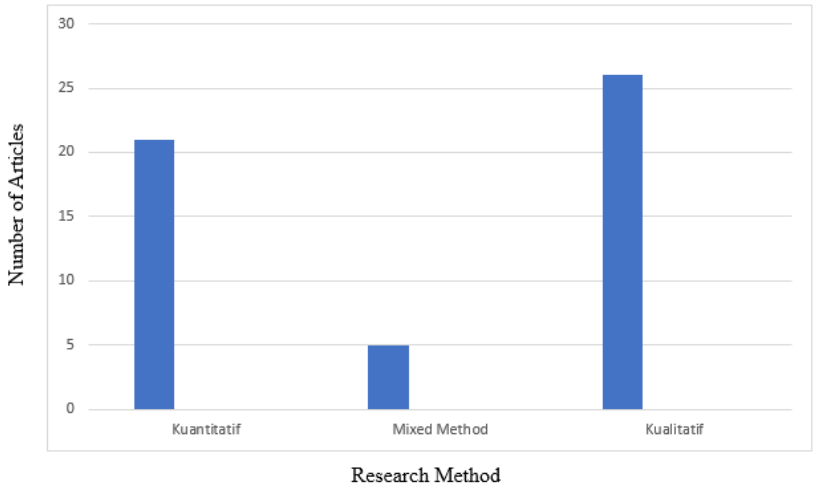

Figure 3. Temporal Distribution of Articles Collected Based on Research Methods

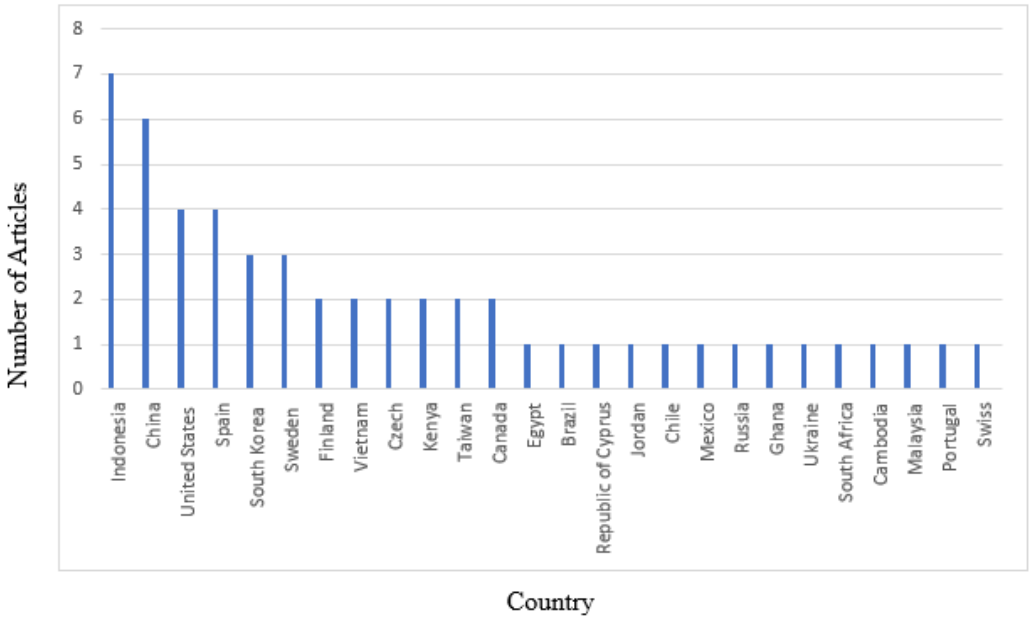

Figure 4. Distribution of Collected Articles by Research Country
Source: Personal Document

The network visualization generated by VOSviewer provides a structured overview of the relationship between key concepts in the study of digital policy and the improvement of access in primary education. Figure 5 explains the analysis of the visualization results from VOSviewer. The VOSviewer visualization shows that the Red Cluster provides insight into education policy in general but needs additional exploration for the primary school context. The Purple Cluster is very relevant to assessing the impact of digital policies on access to digital learning, especially in the context of the digital divide and educational equity. The Blue and Green Cluster helps

identify the success factors of digital learning policy implementation, such as technology integration, digital literacy, and student engagement. Table 2 will explain the visualization results from VOSviewer.

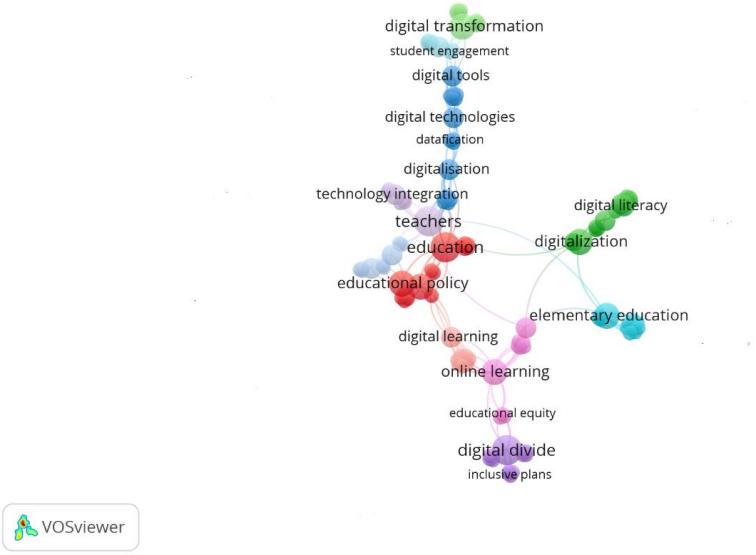

Figure 5. Bibliometric Analysis with Keywords

Table 2. Summary of Finding Based on Clusters

Clusters	Main Keywords	Focus of Analysis
Red Color Cluster	education, educational policy, teachers, technology integration, primary education	The role of education policy in supporting the integration of technology and teacher empowerment in elementary schools
Purple Color Cluster	digital learning, online learning, educational equity, digital divide	Assessing the impact of digital policies on access to learning
Blue and Green Color Cluster	digital transformation, student engagement, digital tools, datafication, digital literacy, digitalization, elementary education	The combination of these two clusters can answer the goal of the success factors of digital learning policy implementation

Digital Policies Implemented in Elementary Schools Globally

Digital transformation in education has become a top agenda in many countries. The implementation of digital policies in primary schools varies based on local needs, technological capabilities, and the government's vision in supporting 21st-century education. Here is an analysis of digital policies in several countries, including Indonesia, China, the United States, Spain, South Korea, Sweden, Finland, and

Vietnam, reflecting their unique approaches to integrating technology in primary education. The findings of digital policies implemented in elementary schools worldwide are shown in Table 3.

Table 3. Comparison of Digital Policies in Elementary Schools

Country	Key Policies	Technology Approach	Challenge	Articles Mentioning Policies
Indonesia	Merdeka Belajar, distribution of digital devices	E-learning platform, teacher training	Internet infrastructure gaps in remote areas	(Rohmanurmeta et al., 2024); (Thoha et al., 2023); (Suwardika 2024); (Rasdiana et al., 2024)
China	Smart Education China	AI, big data, cloud-based learning	Reliance on technology and government controls	(Saneinia et al., 2024); (Xiao et al., 2022); (Huang, 2015); (Chen et al., 2024)
United States	Future Ready Schools, curriculum STEM	Google Classroom, iPads, project-based learning	Access inequality in certain school districts	(Cain et al., 2024); (Killian et al., 2024); (Nichols & Dixon-Román, 2024)
Spanish	Digital Education Plan	Interactive boards, learning apps	Lack of technological infrastructure in some regions	(Palau et al., 2024); (Mingot & Marín, 2024); (Vaquero et al., 2024)
South Korea	Smart Education, digital textbooks	AR, VR, High-speed internet network	High reliance on technology	(Jung et al., 2024); (Im, 2024); (Cho et al., 2024)
Sweden	Digital literacy as a compulsory curriculum	Coding, personalization of learning, universal access to devices	Cost of school-wide technology implementation	(Stenbom & Geijer, 2024); (Kjällander et al., 2021); (Genlott et al., 2023)
Finland	Project-based learning and collaboration	Creative software, integration of technology in various subjects	Challenges in teacher training for innovative technologies	(Ivanishchenko et al., 2024); (Reidenberg & Schaub, 2018); (Kirchner, 2024)
Vietnam	EduNet, online teaching	National e-learning platform	Equitable access to technology in remote areas	(Nguyen et al., 2022); (Nguyen & Tran, 2024)

In Indonesia, digital policies for elementary schools are directed through the Merdeka Learning program, launched by the Ministry of Education and Culture (Rohmanurmeta et al., 2024). The government encourages the use of technology in learning through the provision of digital platforms such as Ruang Guru (Thoha et al., 2023). In addition, there are initiatives to distribute digital devices and train teachers to improve technological competence (Suwardika 2024). However, the main challenge is the digital divide in rural areas that still require adequate internet infrastructure (Rasdiana et al., 2024).

China has an ambitious digital policy with a focus on integrating advanced technologies such as artificial intelligence and big data in Education (Saneinia et al., 2024). Programs using hardware such as tablets in classrooms, as well as AI-based educational applications for learning personalization (Xiao et al., 2022). In addition, China is developing cloud-based learning resources to ensure wider accessibility, even in remote areas (Huang, 2015); (Chen et al., 2024).

Digital policies in the United States are diverse, as state and school district governments carry out education management (Cain et al., 2024). However, most elementary schools have adopted technologies such as *Google Classroom*, *iPads*, and STEM (Science, Technology, Engineering, and Mathematics)-based curriculum (Killian et al., 2024). Programs like *Future Ready Schools* aim to help schools strategically utilize technology, with a focus on developing 21st-century skills such as critical thinking and collaboration (Nichols & Dixon-Román, 2024).

In Spain, digital policies for primary education are regulated through national frameworks such as the Digital Education Plan (Palau et al., 2024) The government encourages the use of digital tools such as interactive boards and learning-based applications (Mingot & Marín, 2024) In addition, teacher training is a considerable investment to ensure they can use technology effectively. Spain also prioritizes teaching digital literacy skills to students from an early age (Vaquero et al., 2024).

South Korea implements a highly advanced digital education policy as one of the countries with the highest technology penetration worldwide (Jung et al., 2024). The government introduced digital textbooks and an online-based learning management system (Im, 2024). Elementary schools in South Korea also utilize high-speed internet networks to support online and hybrid learning. In addition, the national Smart Education program focuses on integrating Augmented and Virtual Reality to create immersive learning experiences (Cho et al., 2024).

In Sweden, digital policies in primary education are oriented towards inclusive and personalized learning (Stenbom & Geijer, 2024). The national program includes the integration of technology into all aspects of the curriculum, including the teaching of coding early (Kjällander et al., 2021). The government also provides universal access to technological devices and internet connectivity. Sweden emphasizes the importance of digital literacy as part of the compulsory curriculum (Genlott et al., 2023).

Finland, known for its progressive education system, implements a student-centered digital policy (Ivanishchenko et al., 2024). Technology is used to support project-based and collaborative learning. The Finnish government provides access to educational software specifically designed to enhance creativity and problem-solving. In addition, digital literacy is integrated into various subjects to prepare students for future demands (Reidenberg & Schaub, 2018).

Vietnam, although still developing in terms of technological infrastructure, has shown significant progress in digital policies for Education (Nguyen et al., 2022). The government's primary focus is the EduNet program and online teaching initiatives. Vietnam also invests in national digital platforms to support distance learning, especially during the pandemic. The main challenge lies in the equitable distribution of access to technology in rural areas (Nguyen & Tran, 2024).

Impact on Increasing Access to Digital Learning

Increased access to digital learning has significantly impacted education systems in various countries. Based on the analysis of various scientific articles, these impacts can be classified into several main aspects: educational affordability, social inclusion, quality of learning, and 21st-century skill development. This increase in access is supported by technological developments such as more affordable hardware, rapidly growing online learning platforms, and increasingly widespread internet connectivity. Here is a description of these impacts. The findings of the impact of increasing access to digital learning are shown in Table 4.

Affordability of Education

The increase in access to digital learning has made education more affordable for various groups of society, especially those who previously had difficulty accessing formal education (Ly et al., 2024). With online platforms and open educational resources, students can learn at a lower cost (Lucas et al., 2024). For example, government programs in many developing countries have provided free and subsidized learning software for digital devices, allowing more students to participate in learning (Wardoyo et al., 2021). However, affordability still faces challenges in remote areas that have limited infrastructure (Hagerman & Neisary, 2024).

Social Inclusion

Digital learning has contributed to social inclusion by reaching students from different social, economic, and geographical backgrounds (Katyeudo & de Souza, 2022). This technology allows students with disabilities to learn through accessibility features such as text-to-speech, interactive visual materials, and adaptive devices (Trejo-Quintana & Espinoza, 2022). In addition, digital education makes teaching easier for remote and isolated communities, bridging existing educational gaps (Talreja & Agashe, 2024). This is especially evident in countries such as Vietnam and India, where digital learning has become a tool to reduce social disparities (Nguyen et al., 2022); (Chand & Deshmukh, 2019).

Improving the Quality of Learning

With digital learning, students have access to a broader range of high-quality educational resources, including interactive videos, simulations, and game-based learning (Picka et al., 2022). This technology supports more flexible learning methods, allowing students to learn at their own pace (Khilya, 2023). Additionally, the integration of technologies such as Artificial Intelligence into the curriculum has improved students' understanding of complex concepts (Fundi et al., 2024). The impact is felt in the learning of science, mathematics, and technology (Muranov et al., 2023).

21st Century Skills Development

Digital learning encourages the development of essential 21st-century skills, such as critical thinking, collaboration, digital literacy, and creativity (Pizarro et al., 2024). Using digital tools, students learn academic content and how to use technology productively (Loganathan et al., 2021). For example, coding learning programs for children in Sweden and Finland have improved students' technical abilities early, preparing them for the technology-dominated world of work (Kjällander et al., 2021) (Ivanishchenko et al., 2024).

Table 4. The Impact of Increasing Access to Digital Learning

Aspects	Key Impact	Articles Mentioning Impact
Affordability of Education	Reduce education costs through online platforms.	(Lucas et al., 2024)
	Provision of free or subsidized devices by the government	(Wardoyo et al., 2021); (Kirchner, 2024)
	Reducing access inequality in big cities	(Hagerman & Neisary, 2024); (Remillard et al., 2021)
Social Inclusion	Reach remote communities	(Katyeudo & de Souza, 2022)
	Accessibility features for students with disabilities	(Trejo-Quintana & Espinoza, 2022)
	Reducing educational disparities in various regions	(Talreja & Agashe, 2024); (Nguyen et al., 2022); (Chand & Deshmukh, 2019)
Quality of Learning	Access to high-quality materials	(Picka et al., 2022); (Kirchner, 2024)
	Supporting learning flexible and personalization	(Khilya, 2023); (Moreira et al., 2023)
	Increased understanding of complex concepts	(Muranov et al., 2023); (Poldoja, 2020)
21st Century Skills	Development of digital literacy and technical skills	(Pizarro et al., 2024); (Saneinia et al., 2024)
	Collaborative learning through online tools	(Loganathan et al., 2021); (Cain et al., 2024); (Killian et al., 2024); (Nichols & Dixon-Román, 2024)
	Boost creativity through simulation and play	(Kjällander et al., 2021); (Ivanishchenko et al., 2024)

Factors Affecting the Success of Digital Learning Policy Implementation

Implementing digital learning policies has become a priority in various countries in response to the demands of globalization and technological developments. Based on the analysis of various scientific articles published in international journals, several key factors affect the successful implementation of this policy. These factors can be grouped into several main aspects: government policy, technological infrastructure, educator capacity, user acceptance, and socio-economic support. Here is an in-depth analysis of these factors. The findings of factors affecting the success of digital learning policy implementation are shown in Table 5.

Table 5. Factors Affecting the Success of Digital Learning Policies

Aspects	Key Factors	Articles Mentioning Factors
Government Policy	Political support	(Cruz et al., 2023); (Zhao et al., 2024)
	Clear roadmap	(Wagman, 2023); (Jung et al., 2024)
	Adequate budget allocation	(Šramová & Pavelka, 2023)
Technology Infrastructure	Stable internet access	(EL-Nwasany et al., 2024)
	Provision of hardware and software	(Wang et al., 2024); (Reidenberg & Schaub, 2018);
	Network investment in remote areas	(Ilyas et al., 2022); (Ika Sari et al., 2024); (Nguyen et al., 2022); (Li, 2024)
Educator Capacity	Continuous training	(Pavlou & Castro-Varela, 2024)
	Teachers' digital literacy	(Abedi et al., 2024); (Genlott et al., 2023); (Moreira et al., 2023)
	Technical support during implementation	(Kindei et al., 2022); (Caneva et al., 2023)
User Acceptance	Positive perception of technology	(Saal et al., 2024); (Xiao et al., 2022)
	Overcoming resistance to change	(Nichols & Román, 2024); (Saneinia et al., 2024);
	Student and teacher adaptation	(Chand & Deshmukh, 2019)
Socio-Economic Support	Device subsidy	(AlAli, 2024); (Reidenberg & Schaub, 2018);
	Availability of education funds for underprivileged families	(Saal et al., 2024); (Chand & Deshmukh, 2019)
	Equality of access	(Cho et al., 2024); (Nogueira et al., 2022)

Government Policies and Regulations

The successful implementation of digital learning policies is highly dependent on strategic and comprehensive planning from the government (Cruz et al., 2023). Clear, directed, and supported policies supported by adequate budget allocation will facilitate the adoption of digital technologies in Education (Zhao et al., 2024). Countries

such as Finland and South Korea have shown success in implementing digital learning policies due to the existence of a strong roadmap and consistent political support (Wagman, 2023); (Jung et al., 2024). In addition, policies should include access settings, data security, and detailed implementation guidance so that policies can be uniformly applied across different levels of Education (Šramová & Pavelka, 2023).

Technology Infrastructure

The availability of adequate technological infrastructure, such as stable internet access, hardware, and learning software, is the primary condition for the success of this policy (EL-Nwasany et al., 2024). The research article shows that areas with low internet connectivity tend to face more significant challenges in implementing digital learning (Wang et al., 2024). Case examples are developing countries such as Indonesia and Vietnam, where the gap in internet access in remote areas is the main obstacle (Ilyas et al., 2022); (Ika Sari et al., 2024); (Nguyen et al., 2022). Therefore, significant technological infrastructure investments, including internet networks in rural areas, are urgently needed to create equitable access to digital learning (Li, 2024).

Capacity and Competence of Educators

Teachers and educators play a central role in the success of digital learning. Without sufficient training, the technology provided is often not utilized optimally (Pavlou & Castro-Varela, 2024). Continuous teacher training must be an integral part of digital learning policies (Abedi et al., 2024). Training programs such as those conducted in Sweden and Spain, which focus on improving teachers' digital literacy and technical skills, have been shown to increase the effectiveness of technology implementation in the classroom (Genlott et al., 2023); (Moreira et al., 2023). In addition, educators need to be encouraged to develop interactive and technology-based learning methods to increase student engagement. (Kindei et al., 2022); (Caneva et al., 2023).

User Acceptance and Adaptation

The acceptance of technology by students and educators is another factor that is no less important (Saal et al., 2024). Research shows that perceptions and attitudes toward technology influence the success of implementing digital learning policies. Countries such as the United States have conducted in-depth research on the importance of overcoming psychological barriers, such as resistance to change and lack of confidence in using new technologies (Nichols & Román, 2024). To address this, a collaborative approach involving students, teachers, and parents in the implementation process can increase acceptance rates (Chand & Deshmukh, 2019).

Socio-Economic Support

*S*ocio-economic factors, such as people's income levels and the availability of digital devices, significantly affect the success of the implementation of digital learning (AlAli, 2024). Research in some countries, such as South Africa and India, shows that students from underprivileged families often struggle to obtain the necessary learning tools (Saal et al., 2024); (Chand & Deshmukh, 2019). This has led to a widening digital divide. Device subsidy programs or device procurement by the government, such as

those carried out in South Korea, can be a solution to ensure that all students have equal access to digital learning (Cho et al., 2024).

Discussion

Digital policies implemented in primary schools reflect the diverse approaches taken by countries worldwide. Investment in digital infrastructure is the foundation that determines the success of the implementation of digital policies in primary education (Turiman et al., 2019). Without a reliable internet network and adequate devices, efforts to integrate technology into the classroom will not be practical. Many countries have shown that the development of a well-rounded technology ecosystem, including the availability of digital platforms that fit the curriculum, can improve student engagement and learning outcomes (Howorth et al., 2024). Effective use of technology depends not only on the availability of devices but also on the readiness of teachers to utilize the technology. Countries that have successfully implemented digital policies optimally have continuous training programs for educators to master technology skills while applying them to teaching strategies (Chauhan, 2017). Curriculum that supports digital transformation needs to be designed adaptively to be relevant to the needs of the digital era. Several countries have implemented a project-based approach that integrates technology in cross-disciplinary learning. For example, Australia includes coding and digital literacy in its primary education curriculum (Denys & Klimczuk, 2023).

The recommendation for the digital policy in primary schools is that developing countries must allocate more resources to improve internet access and provide technological devices in primary schools (Katyeudo & de Souza, 2022). Additionally, building public-private partnerships can be a solution to cover funding gaps (Hutson et al., 2024). Digital policies must focus on sustainability and inclusivity. This means involving local communities in the implementation process and ensuring the technology is accessible to all students, including those from remote areas with special needs.

Increasing access to digital learning has become one of the biggest revolutions in the world of modern education (Khilya, 2023). This allows education to reach remote areas that were previously difficult to access while answering the need for more personalized and flexible learning (Nichols & Dixon-Román, 2024). With digital technology, geographical and economic limitations that often hinder the equitable distribution of education can be increasingly minimized. The digitalization of education has opened the door to the creation of an inclusive learning system, allowing students with different social and economic backgrounds to obtain an equal quality of education (Kurulenko & Kuzichkina, 2018).

Digital learning technology contributes significantly to educational inclusivity. With digital platforms such as Learning Management Systems (LMS), learning videos, and Open Educational Resources, students can access educational materials without being in a traditional classroom (Fundi et al., 2024). In addition, initiatives such as the rollout of community Wi-Fi networks or the provision of digital devices to students in

remote areas have made education more affordable and accessible to more individuals (Genlott et al., 2023). The move also supports inclusive education, where students with special needs can learn through digital tools designed specifically for them. Although the benefits are great, implementing digital learning is not separated from the challenges. One of the main obstacles is the disparity in access to technological infrastructure, such as limited internet connectivity in many rural areas or developing countries (Remillard et al., 2021).

On the other hand, teacher readiness is also a determining factor in the success of digital technology adoption in schools. Without adequate training, many teachers find it challenging to utilize technology as part of their teaching strategies (Moreira et al., 2023). Therefore, governments and educational institutions need to focus on providing infrastructure and ensuring the readiness of supporting human resources. To ensure the sustainability of the benefits of digital learning, investment in educational infrastructure must be prioritized. The government needs to establish partnerships with the private sector to build high-speed internet networks in remote areas and provide learning tools for students in need (Chand & Deshmukh, 2019).

The successful implementation of digital learning policies is highly dependent on the availability of adequate infrastructure. The main foundations are access to a stable internet network, hardware such as computers or tablets, and a reliable digital learning platform. Without this infrastructure, digital learning policies will only be a plan without actual implementation (Kong et al., 2017). However, the existence of infrastructure alone is not enough; educators' capacity to utilize this technology is also a key factor. Teachers and educators must have technical skills and pedagogic understanding to integrate technology into learning (Tongli, 2024). Continuous training, technical guidance, and professional assistance can improve teachers' competencies in utilizing digital learning effectively (Rojas et al., 2023). In this context, governments and educational institutions must work together to ensure that teachers are equipped with the necessary tools and skills so that technology is an additional tool and an integral part of the learning process.

The success of these policies also depends on the ability to create equitable access for all levels of society. Inequality in access to technology, both due to economic, geographical, and social factors, can make a widening digital gap (Sari et al., 2024). Therefore, digital learning policies must be designed inclusively, ensuring that communities in remote or underdeveloped areas benefit equally. This step requires collaboration between the government, the private sector, and the community to build an inclusive digital education ecosystem (Kindei et al., 2022). In addition, policy success must be supported by a continuous evaluation mechanism. These evaluations not only measure the impact of policies but also provide feedback to improve policies as needs evolve. In a global context, adaptive evaluation ensures that digital learning policies remain relevant amid technological changes and the community's educational needs.

D. Conclusion

This article contributes significantly to the theory of technology integration in primary education. By analyzing various global digital policies in primary schools, this paper strengthens the understanding of the relationship between education policy, technological infrastructure development, and equitable access to education. In addition, this study highlights the importance of contextual-based policy adaptation, which can be the basis for developing a new theoretical framework for the successful transformation of digital learning. The analysis of 52 articles shows that global digital policies implemented in elementary schools significantly impact increasing access to digital education. Approaches such as infrastructure improvement, teacher training, and technology-based curriculum development have succeeded in improving the quality of learning and reducing the digital divide in several countries. Increased access to digital learning has significantly impacted education systems in various countries. This increase in access is supported by technological developments such as more affordable hardware, rapidly growing online learning platforms, and increasingly widespread internet connectivity. Factors that affect the successful implementation of digital learning policies include government policies that support digital learning, technological infrastructure, educator capacity, user acceptance, and socio-economic support.

This article has the limitation of the analysis focusing more on the impact of policies in general without detailing the interaction between policies, local culture, and socio-economic conditions in depth and using secondary data from the available articles without involving primary data, so the results of the analysis are more descriptive than experimental. Further research is recommended to more deeply analyze the impact of digital learning policies in local contexts, especially in developing countries, by paying attention to the challenges of infrastructure and resource gaps. In addition, further studies could explore new technological innovations, such as artificial intelligence or adaptive learning, to support the personalization of education. Interdisciplinary research involving sociocultural and economic aspects is also essential for designing more inclusive and sustainable policies at the global level. Long-term monitoring of the implementation of digital policies is also needed to evaluate the long-term impact on the quality and equity of education.

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