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Analyzing Digitalization in Education Policy in Indonesia through the Policy Analysis Triangle Model

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Abstract

The digitalization of education is one of the global trends that influences the transformation of the education system in Indonesia. However, the policy of digitalization of education faces various challenges, such as uneven infrastructure and the readiness of educators in utilizing digital technology. This study aims to analyze the policy of digitalization of education in Indonesia using the Policy Analysis Triangle Model, which includes aspects of context, policy content, policy-making process, and the actors involved. This research method uses a qualitative approach with a case study design, where data is collected through in-depth interviews with stakeholders, policy document studies, and direct observations in several schools. The results of the study show that in terms of context, this policy was born due to global and domestic demands to respond to the gap in access to education, especially between urban and rural areas. In terms of content, the digitalization policy includes various initiatives such as the Merdeka Mengajar platform, Education Report, SIPLah, ARKAS, and Laptop assistance. The policy-making process involves extensive research and consultation with various stakeholders, although there are still challenges in harmonizing central and regional policies. In terms of actors, the involvement of the government, schools, the private sector, and the community is very important, but closer collaboration is still needed to support the implementation of policies evenly. The recommendations put forward include improving continuous teacher training, accelerating the development of technological infrastructure in rural areas, and strengthening collaboration between the government, private sector, and communities in supporting the digital transformation of education.

Keywords: Digitalization in Education, Policy Analysis, Indonesia, SDGs 4

Introduction

The digitalization of education has become one of the major global trends influencing the transformation of education systems in various countries, including Indonesia. The application of digital technology in education provides many opportunities to improve access, quality, and efficiency of the learning process. Through digitalization policies, it is hoped that education can become more inclusive and responsive to the needs of an increasingly digitally connected society (Munauwarah & Achadi, 2023). In Indonesia, this policy is also expected to be able to overcome the educational gap that occurs in various regions, especially between urban and rural areas (Yani et al., 2024).

The Indonesian government, through programs such as Merdeka Belajar, has attempted to

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encourage the digitalization of education. This initiative aims to facilitate students' and teachers' access to learning resources, improve digital skills, and support more innovative learning transformations (Irawaty, 2023). This step is increasingly relevant in the post-COVID-19 pandemic context, where distance learning and the use of technology in education are urgent needs (Kurniawan, 2023). However, the implementation of this policy faces quite complex challenges, including uneven infrastructure and the readiness of educators to utilize digital technology (Koesnandar, 2013).

One of the biggest challenges in digitalizing education in Indonesia is the uneven infrastructure. Although in big cities the technology infrastructure and internet access are relatively good, many rural and remote areas still face limited internet access (Ulfa, 2023). This condition creates a gap in the implementation of digitalization policies, where students and teachers in remote areas find it difficult to utilize technology in their learning (Maulida & Wirdanengsih, 2019). In addition, the limited availability of technological devices such as computers and smartphones is also a significant obstacle (Anita & Astuti, 2022).

In addition to infrastructure issues, the readiness of educators to utilize digital technology is another challenge. Many teachers in Indonesia do not yet have adequate digital skills to integrate technology into the teaching process (Mutia, 2023). Training and professional development for teachers in this case are very important so that they can utilize digital platforms effectively in learning activities (Hanafi, 2024). Without adequate readiness, the digitalization policy of education is at risk of not achieving optimal results (Rusdinal et al., 2025).

The policy of digitizing education is also not free from socio-economic challenges. The gap between higher and lower socio-economic groups affects access to technological devices and internet connectivity (Astuti et al., 2020). Students from low-income families tend to face difficulties in accessing the digital tools needed for online learning (Anita & Astuti, 2022). This requires a more inclusive and equitable policy, where the government needs to ensure that all students, regardless of their socio-economic background, can benefit from the digitalization program of education (Sari, 2022).

In addition, the socio-cultural context also plays an important role in the implementation of educational digitalization. Indonesia, which has cultural and linguistic diversity, requires a sensitive approach in digitizing learning materials (Bormasa, 2023). The digital content presented must be relevant to local needs and able to bridge the various differences that exist in society (Koesnandar, 2013). An approach that is too uniform risks not being able to reach all students effectively (Ulfa, 2023).

Ultimately, the success of Indonesia's education digitalization policy depends heavily on good coordination between the government, schools, communities, and the private sector. This collaboration is essential to provide the infrastructure, training, and support needed for the digital transformation to take place smoothly (Sari, 2022). This article will analyze Indonesia's education digitalization policy using various approaches, including a public policy theoretical framework, to evaluate the extent to which this policy has succeeded in achieving its objectives and provide recommendations for future improvements (Jayanti et al., 2021).

Methodology

This study uses a qualitative approach with a case study design to analyze the digitalization policy of education in Indonesia. This approach was chosen because it allows researchers to understand in depth how the policy is formulated and responded to by various actors in a complex and dynamic context (Purnasari & Sadewo, 2021). This study also emphasizes the analysis of the policy process and the factors that influence the emergence of policies (Setyowati, 2023).

To analyze the education digitalization policy, this study uses the Policy Analysis Triangle framework developed by Walt and Gilson (1994). This framework allows researchers to evaluate policies from four main aspects: context, policy content, policy-making process, and actors involved (Sabardila et al., 2021). By using this framework, research can provide a more holistic understanding of the factors that influence the success or obstacles in implementing education digitalization policies in Indonesia (Novitasari & Fauziddin, 2022)

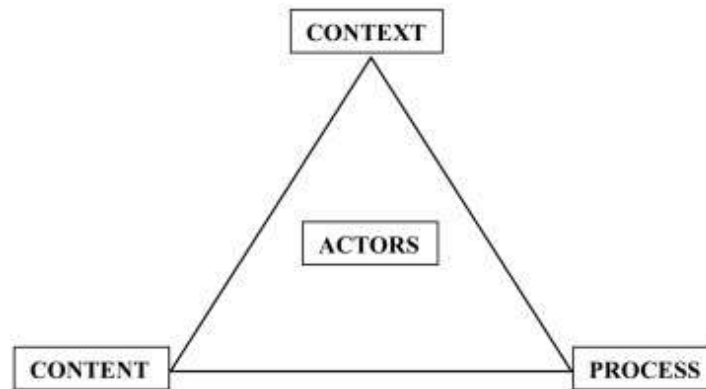


Figure 1: Walt and Gilson (1994)

Data collection was carried out through several techniques, including in-depth interviews with key stakeholders, both at the central and regional levels. These interviews were conducted online and offline, depending on the conditions and preferences of the respondents (Tohet & Hidayat, 2023). Documentation studies of policies, regulations, and official reports related to educational digitalization programs, such as Merdeka Belajar and Merdeka Mengajar Platform, were also conducted (Pahira, 2023). Direct observation in several schools selected purposively aimed to see how digital technology is integrated into the daily learning process and the challenges faced in its implementation (Tukiman & Jabar, 2014).

The data obtained were analyzed using thematic analysis. Each data collected was coded and organized based on the main themes that emerged from the interviews and documentation studies. This analysis aims to identify patterns, similarities, and differences in respondents' views on the digitalization of education, as well as to explore the relationship between various variables such as policies, infrastructure, teacher readiness, and socio-economic challenges (Rezki, 2020).

To ensure data validity, triangulation of data sources was carried out by comparing the results of interviews, observations, and document analysis. In addition, the member-checking technique was applied by confirming the interim findings with several key respondents (Hidayah et al., 2022). Data reliability was maintained by using consistent interview guidelines and systematic data recording (Miftakhuddin, 2021).

Results and Discussion

This study evaluates the digitalization of education policy in Indonesia using the Policy Analysis Triangle Model, which emphasizes analysis on three main elements: context, policy content, policy-making process, and actors involved. Based on data from observation interviews and documents, the results of this study present a more comprehensive picture of the digitalization of education in Indonesia.

Policy Context

The birth of the digitalization policy of education in Indonesia cannot be separated from a series of problems faced by the education system. In a global context that is increasingly driven by technological advances, Indonesia feels the urgency to adapt to the changes that are occurring (Silvester, 2023). This transformation is becoming increasingly urgent given the potential of digitalization to improve access, quality, and efficiency of education throughout the archipelago (Hasmiza & Humaidi, 2023).

One of the main problems is the unequal access to technology and the internet. Although Indonesia has a large population, the distribution of its digital infrastructure is very uneven. In urban areas, internet access and technological devices such as laptops or tablets are relatively better. However, many rural and remote areas still have difficulty getting this access (Hasmiza & Humaidi, 2023). This creates a significant educational gap, where students in remote areas cannot access the same resources as their peers in cities (Suryawan et al., 2022).

The digitalization policy of education was born in response to these challenges, with the aim of ensuring that all students, regardless of their geographic location, have equal opportunities to learn (Novitasari & Fauziddin, 2022). In addition, the Indonesian education system also faces problems in terms of quality. Despite progress, many schools still lack adequate facilities and resources to provide quality education. In many areas, especially less developed ones, the quality of teaching is still low (Shalahudin, 2023). By integrating technology into education, it is hoped that the digitalization policy can help improve the quality of learning through access to better teaching materials, training for teachers, and more innovative learning methods (Suwardana, 2018).

The readiness of human resources, especially teachers, is also a significant problem. Many teachers in Indonesia do not yet have adequate digital skills to integrate technology into the teaching and learning process (Taufiqurrahman, 2022). Limitations in training and technical support make it difficult for many teachers to use existing digital platforms. The education digitalization policy is designed to provide the necessary training so that teachers can make maximum use of technology in their teaching (Basar, 2021).

In addition, funding factors are also an obstacle. Although the government has tried to allocate a budget for the digitalization of education, the available funds are often insufficient to meet all needs, including the procurement of technological devices and infrastructure improvements in schools (Wiravanjava, 2017). With the digitalization policy, the government is trying to create a more sustainable and planned solution in the use of the budget for education (Fisabilillah & Rahmadanik, 2022).

The COVID-19 pandemic also contributed to the birth of this policy. With physical restrictions requiring schools to close, online learning has become a necessary solution to maintain the

sustainability of education (Putra, 2023). Experience during the pandemic shows that without adequate digital infrastructure, the learning process will be disrupted. Therefore, the education digitalization policy also aims to prepare the education system to be more resilient and adaptive in facing future emergency situations (Syahid et al., 2022).

Socio-economically, there is a large gap between schools in areas with more advanced economic conditions compared to schools in disadvantaged areas. Students in remote areas often do not have technological devices such as laptops or smartphones, which are essential to support the digital learning process (Saputra, 2022). This gap is the main focus of the digitalization policy to ensure that all students, regardless of geographic location and economic status, can have equal access to educational technology (Rahman & Nuryana, 2019).

Policy Content

The content of the digitalization policy for education in Indonesia includes various initiatives and platforms designed to support educational transformation through technology. Some of the main initiatives are as follows:

- **Platform Merdeka Mengajar (PMM):** PMM acts as the main tool to improve teacher competency and provide digital resources that can be used in the teaching process. This platform allows teachers to access teaching materials, training modules, and learning communities online. However, the effectiveness of PMM depends on teachers' ability to use this platform, and there is still a gap in technical training for teachers, especially in remote areas. This policy is written in Perdirjend Number 7607/B.B1/HK.03/2023, Joint Circular Letters from BKN and Ministry of Education Numbers 17 and 19 of 2023)



Figure 1: Platform Merdeka Mengajar (PMM)

- **Education Report (Rapor Pendidikan):** Education Report is a platform that displays

school educational achievements, including key learning indicators such as literacy, numeracy, and student character . The platform helps schools identify areas for improvement and plan better actions based on data. Nearly 95% of primary and secondary schools have adopted the platform, and over 80% of users agree that the platform helps identify priorities for school improvement . However, there are still challenges in effectively utilizing this data by schools in resource-constrained areas. The policy of **Rapor Pendidikan** (Government Regulation Number 57 of 2021, Permendikbudristek Number 9 of 2022)

- **SIPLah (School Procurement Information System):** SIPLah is a procurement platform for goods and services that connects schools with provider partners for educational purposes. This platform helps schools conduct procurement transparently and efficiently, which is very important in managing the education budget . SIPLah provides wider access to various educational products with a wider reach, although some schools in remote areas still face technical obstacles in utilizing this platform optimally. **SIPLah** (Persesjen Number 12 of 2022, Permendikbud Number 18 of 2022)
- **ARKAS (School Activity and Budget Plan Application):** ARKAS is an application designed to help schools plan, manage, and report education budgets more easily and efficiently. This platform provides transparency in the management of school funds, which were previously often hampered by slow and inaccurate manual processes . However, the implementation of ARKAS in some schools is still limited by the lack of training for administrative staff and internet access problems. The content of **ARKAS** Policy writed in Permendikbud Number 19 of 2007, Joint Circular Letters from Ministry of Home Affairs and Ministry of Education and Culture Number 7 of 2021
- **Laptop Assistance:** The laptop distribution program aims to support the digitalization of education by providing schools with the hardware they need to access digital platforms such as PMM, Rapor Pendidikan, and ARKAS. By 2023, the government had distributed more than 1.25 million laptops to schools across Indonesia . However, while the program is important in increasing access to technology, the distribution of these laptops has not been entirely equitable, with disadvantaged areas often still facing a shortage of devices.

Policy Making Process

The process of making a digital education policy in Indonesia is a complex process and involves various structured steps. This process begins with identifying the problems faced by the national education system. In this context, the government is aware of the unequal access to technology and the internet, especially between urban and rural areas. Many schools in remote areas do not have adequate facilities to support digital learning, and the quality of education offered often varies Pratiwi (2024). The readiness of teachers to integrate technology into teaching is also a major concern. Identification of these problems provides a strong foundation for initiating the necessary changes in the education system (Zhang et al., 2021).

Once the problems are identified, the next step is to formulate a vision and policy objectives. The Ministry of Education, Culture, Research, and Technology (Kemendikbudristek) has formulated a vision to create an inclusive, quality, and efficient education system. This vision focuses not only on increasing access to education throughout Indonesia but also on empowering teachers and principals to use technology in the learning process (Bonfield et al., 2020). In formulating

policy objectives, the government emphasizes the importance of developing a curriculum that is relevant to the needs of the times, as well as utilizing technology as a tool to improve students' learning experiences (Lee & Hidayat, 2019).

The next process involves extensive research and consultation with various stakeholders. The Ministry of Education, Culture, Research, and Technology holds dialogues with teachers, principals, students, and the community to understand the needs and challenges faced in the field. They also study best practices from other countries that have successfully integrated technology into education (Dong et al., 2020). Through this process, the government seeks to ensure that the policies to be formulated are in accordance with the social and cultural context of Indonesia, and can be implemented effectively (Mardiani, 2023).

After conducting research and gathering input, the development of a digital education policy begins. Various policy documents are prepared, including guidelines for the use of technology in education and training for teachers. The Ministry of Education, Culture, Research, and Technology collaborates with the technology team to develop a digital platform that supports the teaching and learning process. Examples include the Merdeka Mengajar Platform and the Education Report system, which are designed to provide teachers with better access to manage learning and understand student progress (Arianto, 2024).

Before implementing the policy widely, a trial of the digital solutions that have been developed is carried out. This stage is very important to evaluate the effectiveness of the platform and technology implemented. Data collection is carried out to assess how users, especially teachers and students, use the platform, as well as its impact on the learning process (Nuryadi, 2023). The results of this evaluation are the basis for making adjustments before the policy is fully implemented.

The development of a sustainable education ecosystem is the main focus after the implementation of the policy. The government seeks to strengthen collaboration between schools, teachers, parents, and the community to create a more inclusive learning environment. Building a learning community and providing ongoing training programs are important steps to ensure that the education digitalization policy continues to develop and provides long-term benefits (Suhada et al., 2022).

With structured steps and involving various stakeholders, the digitalization policy of education in Indonesia is expected to improve access, quality, and relevance of education in the digital era, as well as prepare the younger generation to face future challenges. This process is a real example of how the government is trying to respond to the needs of society in the context of ever-changing education (Sismanto, 2024).

Actors Policy

The formulation of the digitalization policy for education in Indonesia involves various actors who play important roles in every stage of the policy-making process. This process begins with the involvement of the central government, especially the Ministry of Education, Culture, Research, and Technology (Kemendikbudristek), which is the main actor in formulating the policy. By identifying various challenges faced by the education system, such as unequal access to technology, varying quality of education, and teacher readiness to utilize technology, the central government took the initiative to formulate a clear vision and policy objectives Nabil (2020). The vision not only includes increasing access and quality of education, but also

empowering teachers and principals in integrating technology into the teaching and learning process (Yuliah, 2020).

Local governments also play an important role in implementing policies at the local level. They are responsible for translating policies set by the central government into real practices in schools. In this process, local governments can provide input on specific needs and challenges faced in their areas. This creates synergy between national policies and local conditions, so that policy implementation can be carried out more effectively (Oktavia et al., 2021).

On the other hand, schools and educational institutions are key actors in implementing educational digitalization policies. Principals and teachers are at the forefront of implementing technology in the classroom. They not only use digital platforms in teaching, but also act as agents of change who encourage students to be more active in the learning process. Their involvement in the policy development process is crucial, as they have direct insight into the challenges faced in the field (Kholifah et al., 2022).

The private sector also contributes significantly to the success of education digitalization policies. Technology companies and education service providers play a critical role in providing the necessary digital infrastructure and platforms. Partnerships between the government and the private sector help accelerate policy implementation, ensure that the technology solutions provided are in line with educational needs, and support training for teachers and school staff (Hapsari et al., 2022).

The role of academics and researchers is also no less important. They contribute through in-depth research and analysis of best practices in other countries. By conducting studies on the effectiveness of the use of technology in education, academics help the government formulate policies that are based on evidence. Their involvement also provides confidence that the policies formulated have a strong scientific basis (Febriyani, 2021).

Non-governmental organizations (NGOs) also have a role in supporting education digitalization policies. NGOs are often involved in advocacy, research, and implementation of education programs. By providing different perspectives, they help bridge the gap between government and society, especially in terms of access to education in disadvantaged areas (Lase, 2024).

Aspect	Details
Context of Policy (Agenda Setting)	<ul style="list-style-type: none"> - Global technology development - Education gap between urban and rural areas - Infrastructure limitations (internet access) - The COVID-19 pandemic
Policy Content	<ul style="list-style-type: none"> - Merdeka Mengajar Platform (Perdirjend Number 7607/B.B1/HK.03/2023, Joint Circular Letters from BKN and Ministry of Education Numbers 17 and 19 of 2023) - Rapor Pendidikan (Government Regulation Number 57 of 2021, Permendikbudristek Number 9 of 2022) - SIPLah (Persesjen Number 12 of 2022, Permendikbud Number 18 of 2022) - ARKAS (Permendiknas Number 19 of 2007, Joint Circular Letters from Ministry of Home Affairs and Ministry of Education and Culture Number 7 of 2021)

Policy Making Process (Formulation)	<ul style="list-style-type: none"> - Problem Identification - Alignment with Ministry Vision and Mission - Consultation with stakeholders (teachers, principals, private sector) - Research on access and technology gaps - Trial and evaluation of implementation
Actors Involved (Formulation)	<ul style="list-style-type: none"> - Central and local governments - Schools and teachers - Private sector (infrastructure and technology providers) - Society and educational support communities

The media serves as an important information channel in the policy-making process. Through news that focuses on education digitalization policies, the media can raise public awareness of the policies implemented, as well as the challenges and successes faced. By covering various stories about policy implementation in the field, the media can also provide feedback from the public that is very useful for policy makers (Rajabiantoro et al., 2022).

By involving these various actors, the process of making and formulating digital education policies in Indonesia runs dynamically and collaboratively. This diverse involvement not only ensures that the resulting policies are relevant to the needs of the community, but can also be implemented well in the field, bringing a positive impact on education in Indonesia (Husen, 2023).



Figura 2. Triangel analysis policy of digitalization on education

Conclusion

The digitalization policy of education in Indonesia was born in response to significant challenges in the education system, including unequal access to technology, varying quality of education, and teacher readiness in integrating technology in teaching. Using *the Policy Analysis Triangle Model*, this analysis emphasizes the importance of context, policy content, policy-making process, and involvement of various actors in formulating this policy. Although various initiatives such as *the Merdeka Mengajar Platform*, *Rapor Pendidikan*, *SIPLah*, and *ARKAS* have been introduced, their effectiveness is still hampered by gaps in teacher training and inadequate infrastructure, especially in remote areas.

To improve the effectiveness of Indonesia's education digitalization policy, the government needs to accelerate the development of technology infrastructure in remote areas so that all students can optimally access digital platforms. In addition, more comprehensive and sustainable training programs for teachers should be implemented to ensure they have the necessary skills to integrate technology into teaching. More effective monitoring and evaluation should be conducted to assess the impact of the policy, and the data collected should be used to make necessary adjustments. Strengthening partnerships with the private sector in providing technology and encouraging active involvement from parents and the community are also important to create greater support and improve the overall quality of education.

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