

Original Article

Evaluation of Teacher Professional Development and Policy in the Digital Era

Zulfadmi ^{1*}, Muzakkir ¹, Fahmi Hanifa ²

¹ UIN Ar-Raniry Banda Aceh

² STIKES Medika Nurul Islam

*Corresponding author: zulfadmi@email.com

Abstract

Digital transformation in the world of education requires teachers to continue to develop their professional competencies in order to meet the needs of 21st century learning. This study aims to evaluate the effectiveness of teacher professional development policies in the digital era, with a focus on the implementation of technology-based training and its impact on improving teacher competencies. The method used is a literature review by analyzing various sources of literature related to teacher professional development strategies in the digital era. The results of the study indicate that effective strategies include technology training, collaboration with colleagues, and participation in professional discussions. Thus, teachers can improve their competencies and prepare students to face increasingly complex digital challenges. In addition, support from schools, government, and related institutions is very important in implementing this strategy. This study is expected to provide guidance for education policy makers and related parties to improve teacher professionalism in the digital era in order to achieve better educational goals.

Keywords Teacher Professional Development, Education Policy Evaluation, Digital Era.

INTRODUCTION

Policy evaluation is the activity of measuring and assessing the performance of a public policy to determine whether the policy objectives have been achieved, Dunn (2003). It is closely related to the above opinion that policy evaluation is a systematic process carried out to measure and assess the performance of a public policy. The main purpose of this evaluation is to determine the extent to which the policies that have been implemented are able to achieve the goals that have been set previously. In this context, evaluation serves as a tool to assess the effectiveness of policy implementation, identify obstacles or shortcomings in its implementation, and provide a basis for consideration for improvement or preparation of better policies in the future. This is as stated in Dunn (2003). He explained that policy evaluation aims to determine whether the policy is actually running in accordance with the predetermined targets.

Policy evaluation should emphasize sustainability, effectiveness, efficiency, and relevance to the needs of society and changing times (Anderson, 2006). Thus, when



referring to this opinion, it can be understood that teacher professional development is an ongoing process that aims to improve teachers' competence, performance and professionalism in carrying out educational tasks. This process includes various activities, such as training, workshops, seminars, technology-based learning, and further education designed to expand teachers' knowledge and skills in accordance with the development of science, technology, and the needs of students.

Teacher professional development is a systematic and sustainable effort to improve the competence of teachers in order to improve the quality of learning (Mulyasa, 2013). With the teaching profession developing systematically and continuously, this will accelerate the improvement of their competence as educators. This effort is an integral part of improving the quality of education, because teachers play a central role in the learning process. Competency improvement includes aspects of knowledge, skills and professional attitudes needed to support an effective teaching and learning process that is relevant to the times. By developing competencies on an ongoing basis, teachers are not only able to manage the classroom optimally, but can also become agents of change that encourage the improvement of the quality of learning and student learning outcomes. Therefore, teacher professional development is a necessity that is always needed to answer the challenges of education in an ever-changing era.

Transformation digital demands updates in teaching and learning approaches, including in teacher training and professional development. Thus, digital transformation in education has brought significant changes to the way teachers teach and students learn. The rapid development of technology demands an update in teaching and learning approaches, so that conventional methods need to be adjusted to the needs of the times. In this context, teachers are not only required to be able to operate digital devices, but also to integrate technology pedagogically in the teaching and learning process.

Therefore, teacher training and professional development are crucial aspects in facing the digital era. Teachers need to be given access to technology-based training, mentoring, and collaborative spaces to share good practices. This update aims to enable teachers to adapt to various digital platforms, understand the characteristics of today's learners, and create more interactive, personalized and effective learning. Thus, digital transformation does not only change learning tools and media, but also encourages a paradigm shift in the professionalism of educators as a whole.

The digital age is a period in which information and communication technologies fundamentally change the way individuals learn, interact, and obtain information (Bates, 2015). Based on the above opinion, the digital era is a phase of development characterized by the dominance of information and communication technology (ICT) in various aspects of life. In the context of education, this era has fundamentally changed the way individuals learn, interact and obtain information. The learning process that was previously conventional and limited by time and space is now more flexible, open and digital-based. Access to learning resources has become wider through the internet, while communication between teachers and students can be done online with various platforms.

This transformation encourages the emergence of new learning models that are more collaborative, independent and personalized. As stated by Tony Bates (2015), the digital era requires education to adapt learning approaches to the needs of students who are accustomed to living in a digital environment. Therefore, adaptation to technology is a must, not only for students, but also for educators and education managers in order to be able to answer the challenges of the times.

LIBRARY REVIEW

The COVID-19 pandemic has accelerated digital transformation in education, requiring teachers to master technology to support online and hybrid learning. Teacher professional development policies, such as Teacher Professional Education (PPG) and Continuing Professional Development (CPD) in Indonesia, are designed to improve teachers' digital, pedagogical and professional competencies. This study aims to evaluate the effectiveness of these policies in the digital era, with a focus on technology adaptation, curriculum implementation, and their impact on teacher performance. Different from the previous literature review, "Evaluation of the Effectiveness of Professional Education Programs for Teachers", which emphasized the impact of specific training programs on teacher performance and student learning outcomes, this study focuses more on macro policy evaluation, including regulations, supporting infrastructure, and the integration of digital technology in teacher professional development systemically.

The literature shows that teacher development policies in the digital era face significant challenges. A study by Widodo and Suryanti (2022) revealed that PPG in Indonesia improved teachers' digital competencies by 35%, but was hampered by the lack of access to technology infrastructure in remote areas. Internationally, Mishra and Koehler (2006) through the TPACK (Technological Pedagogical Content Knowledge) framework emphasize the importance of technology, pedagogy and content integration in teacher training, which is often poorly reflected in national policies. Research by the OECD (2021) highlights that effective digital education policies require continuous training, infrastructure support and data-driven evaluation, yet many countries, including Indonesia, still lack clear regulations to support this. In Indonesia, PKB policies, as evaluated by Sari et al. (2023), showed an increase in teachers' competency in using online platforms, but only 45% of teachers felt this policy was relevant to their practical needs in the classroom.

Another challenge is unequal access to digital training. Research by Rahayu (2022) found that teachers in urban areas had easier access to technology training than teachers in rural areas, widening the professional gap. In addition, a study by Tondeur et al. (2017) showed that policies that are not supported by contextualized training tend to fail to improve teachers' efficacy in using technology. Policy evaluations are also often limited to quantitative indicators, such as the number of teachers trained, without considering qualitative impacts such as changes in teaching practices. In the Indonesian context, Permendikbud No. 16/2019 on Teacher Competency Standards emphasizes the importance of digital literacy, but its

implementation is still hampered by the lack of consistent monitoring and evaluation.

In contrast to previous literature reviews that focused on evaluating specific training programs such as PLPG or KKG, this study examines teacher professional development policies more broadly, highlighting aspects of regulation, equity of access and integration of digital technology. While the literature addresses various aspects of teacher development, no study has specifically evaluated teacher professional development policies in the digital era through a systematic review in Indonesia. The title "Evaluation of Teacher Professional and Development Policies in the Digital Era" is an original contribution that has not been researched in depth, expected to develop a policy evaluation framework that supports inclusive and sustainable digital education transformation.

RESEARCH METHOD

This research uses a descriptive qualitative approach. This approach was chosen to understand in depth how the implementation and effectiveness of teacher professional development policies in the context of the digital era. Qualitative research allows researchers to explore the meanings, perceptions and experiences of teachers and policy makers related to their professional development process.

Thus, according to Bogdan and Taylor (1975), qualitative research is a research procedure that produces descriptive data in the form of written or spoken words from people and behaviors that can be observed⁷. In accordance with the above opinion, this approach was chosen because it is able to describe in depth and comprehensively the implementation process and effectiveness of teacher professional development policies, especially in facing the challenges of the digital era.

In addition, a qualitative approach is suitable when researchers want to explore the meanings that individuals construct towards a social phenomenon, including public policy. In this case, evaluating teacher professional development policies in the digital era requires an understanding of how teachers, principals and policy makers respond to these policies in daily practice (Creswell, 2014). Thus also emphasizes that a qualitative approach is very appropriate to use when researchers aim to explore the meanings formed by individuals towards a social phenomenon, including public policy. This approach allows researchers to understand how individuals provide interpretations of policies that they experience firsthand. In this context, evaluating teacher professional development policies in the digital era requires an in-depth understanding of the responses of teachers, principals and policy makers to the policies implemented.

Through a qualitative approach, researchers can capture the dynamics, challenges, and perceptions of educational actors in implementing professional development policies, especially in a digitized environment. Thus, this approach provides a more complete picture of the social reality faced in implementing the policy.

DISCUSSION

1. Definition of Policy Evaluation

Policy evaluation is a systematic process carried out to assess the effectiveness, efficiency, relevance, and impact of a public policy, both in terms of planning, implementation, and the final results achieved. This evaluation aims to determine whether the implemented policy has achieved the stated objectives, as well as provide input for future policy improvements.

Evaluation of teacher professional development policies in the context of the digital era is crucial because it concerns improving the quality of national education. According to Dunn (2003), policy evaluation is a systematic process to determine the value or benefits of a public policy, both in the planning, implementation and achievement stages. Evaluation of teacher professional development policies in the digital era is indeed a very strategic aspect in efforts to improve the quality of national education. Along with the change in the learning paradigm marked by technological integration, policies related to improving teacher competence must be able to answer the needs of the times.

If analyzed further, the evaluation of teacher professional development policies in this context is not enough to assess whether training or digital programs have been implemented, but must explore:

1. **Planning:** Is the policy designed based on an analysis of the real needs of teachers in facing digital challenges?
2. **Implementation:** Are professional development programs implemented fairly, equitably, and supported by adequate infrastructure?
3. **Results:** Are there tangible improvements in teachers' digital competencies and learning quality?

This analysis shows that the success of a policy cannot only be measured administratively or formally, but through a more substantive approach, namely how teachers really feel the benefits and apply them in the teaching and learning process. Critically, in the digital era, teacher professional development policies can no longer be general and conventional, but must be adaptive, data-driven, and take into account the local context and technological readiness. Evaluation of these policies must be reflective and dynamic, in line with the rapidly changing needs of education.

In the context of teacher professional development, Glatthorn (1995) emphasizes that professional development is an ongoing process that should be designed to improve teachers' competence, knowledge and effectiveness. But in the digital age, the approach must fundamentally change. Technology-based training is a key requirement in meeting the challenges of the 21st century¹¹. Closely related to the above opinion, teacher professional development is an ongoing process that aims to improve competence, knowledge, and effectiveness in carrying out their duties as educators. This is in line with the view that teachers are the main agents in determining the quality of learning, so strengthening their professional capacity should be a top priority in education policy.

However, entering the digital era, the approach to teacher professional development must undergo a fundamental transformation. Conventional training models are no longer sufficient to equip teachers with skills that are relevant to the demands of the times. Teachers are now required not only to master teaching materials, but also to be able to utilize digital technology creatively and effectively in the learning process. In this context, technology-based training becomes a major necessity to answer the challenges

of 21st century education. Such training includes mastering digital learning platforms, developing interactive teaching materials, and implementing adaptive and collaborative learning approaches. Therefore, teacher professional development is not only technical, but also strategic as part of the transformation of education in the digital era.

Creswell (2014) asserts that a qualitative approach is appropriate in evaluating public policies because it provides space for exploration of perceptions, challenges, and the socio-cultural context that influences policy implementation¹². In the context of evaluating teacher professional development policies in the digital era, a qualitative approach allows researchers to explore the views of teachers, principals, trainers, and policy makers in depth regarding the effectiveness of the policies implemented. This is important because the success of a policy is not only determined by the content of the policy, but also depends heavily on how the policy is understood, accepted and implemented by the implementers in the field.

Thus, a qualitative approach not only provides a description of *what* happened, but also why and how the policy has an impact on practices in the field. This approach makes policy evaluation more reflective, contextual and responsive to the real conditions faced by education actors.

2. Definition of Teacher Profession

The teaching profession is a position or job that requires special expertise in the field of education, and has moral and social responsibility in shaping the character and competence of students. As a profession, the role of teachers is not only teaching, but also educating, guiding, assessing, and evaluating the learning process as a whole¹³.

The teacher is a figure who has a fundamental role in shaping the future of students. In the world of education, teachers not only teach, but also function as mentors and role models. Through the teaching process, a teacher transfers knowledge that can equip students with useful skills. Not only that, teachers also instill life values that will shape students' characters and attitudes in living their lives¹⁴. Therefore, every interaction between teachers and students is not only limited to the delivery of subject matter, but also an opportunity to foster self-confidence, discipline, and a sense of responsibility. A teacher teaches more than just lessons in a book, they prepare students to face the challenges of life by providing an understanding of the importance of ethics, wisdom, and hard work.

By providing a thorough education, both in cognitive and affective aspects, a teacher plays an important role in shaping individuals who are not only intellectually intelligent, but also wise and characterized. This is why the existence of teachers is very influential on the development of society and the nation, because they are the ones who determine the future direction of the generation they educate.

Thus, according to Suyanto and Asep Djihad, the teaching profession is a job that requires certain expertise obtained through special education and training. Professional teachers must have pedagogical, professional personality, and social as the main requirements to carry out their duties effectively

In addition, Law of the Republic of Indonesia Number 14 of 2005 concerning Teachers and Lecturers, Article 1 Paragraph (1) also states that:

"Teachers are professional educators with the main tasks of educating, teaching, guiding, directing, training, assessing, and evaluating students."

Thus, the teaching profession is a job. Thus, the teaching profession is a professional, dignified, and strategic job, because it plays a direct role in shaping the nation's human resources. In general, *teachers* are professional educators who are tasked with teaching, guiding, training, assessing, and evaluating students in the formal education process. According to the Big Indonesian Dictionary (KBBI), a teacher is a person whose job (livelihood, profession) is teaching.

3. Definition of the Digital Age

The digital era is a period in which information and communication technology (ICT) becomes a central part in various aspects of life, including in education, economy, social, and culture. In this era, human activities are strongly influenced by digital devices such as computers, the internet, smartphones, and various digital applications that facilitate access to information and interaction quickly and globally. Thus, the digital era is a major transformation phase in human life, characterized by a paradigm shift from an industry-based economy to a knowledge-based economy. In this era, information becomes the main commodity that is very valuable and becomes the foundation in various sectors of life, including education, economy, and government. Digital technology plays a central role as the main tool in the production, management and distribution of information quickly, widely and efficiently.

These changes are not only technical in nature, but also touch on social, cultural and individual behavioral aspects. Society no longer relies on physical resources as the main driver of the economy, but on the ability to strategically manage and access digital information. Therefore, digital literacy and the ability to adapt to technology become essential demands in facing the dynamics of this era.

A. Positive and Negative Impacts of the Digital Era

The digital era has changed the overall pattern of community interaction. On the one hand, it opens up great opportunities for human resource development and accelerated development. But on the other hand, if not balanced with adequate digital literacy, this development can actually pose new challenges in the form of disinformation, social alienation, and digital inequality. Therefore, the digital era brings various impacts in human life, both in positive and negative forms.

1. Positive Impact of the Digital Age

The positive impact of the digital era refers to the various benefits born from advances in information and communication technology (ICT) in everyday life. The presence of the digital era has fundamentally changed the way humans work, learn and interact. In this context, digital technology provides a major contribution in improving operational efficiency, accelerating access to information, and expanding the reach of education and communication globally. Public services have also become more transparent and responsive thanks to the support of digital systems that facilitate coordination and online-based services. Thus, the digital era not only facilitates individual activities, but also encourages social transformation towards a more connected and productive society. In line with the experts' opinions, advances in digital technology have brought about major changes

in the education system, government, and economy, especially in the form of accelerated access to information and efficient work processes.

Meanwhile, according to Nasution (2019). The positive impacts of the digital era include strengthening technological literacy, improving the quality of learning through digital media, and creating unlimited collaboration through global connectivity²⁰. Thus, the positive impact of the digital era is not only seen from the technical aspect, but also from how technology drives transformation in the process of learning, working, and interacting. One of the main impacts is the strengthening of technological literacy, where individuals and educational institutions are increasingly accustomed to using digital devices in their daily activities. In addition, the quality of learning has significantly improved thanks to the utilization of digital media such as e-learning platforms, interactive videos, and learning applications that support time and place flexibility. On the other hand, the global connectivity brought about by the digital era opens up spaces for collaboration across regions and countries, enabling the exchange of ideas, knowledge, and educational and professional cooperation without geographical boundaries. Thus, the digital era becomes a strategic opportunity to strengthen the capacity of individuals and institutions to face the challenges of the 21st century.

2. Negative Impacts of the Digital Age

The negative impacts of the digital era refer to various consequences or side effects that arise from the massive utilization of information and communication technology, which can have a bad impact on social, psychological, and security aspects of individuals and groups. Some of these negative impacts include dependence on technology, the spread of false information (hoaxes), decreased direct social interaction, mental health disorders, and threats to data privacy.

According to Nasution (2019), amid the various conveniences offered by the digital era, there are risks that must be watched out for, such as increased exposure to negative content, social alienation, and the formation of a generation that is less critical in filtering information. Amid the various conveniences and innovations offered by the digital era, there are a number of risks that should be watched out for. Advances in information technology not only open up access to learning resources and global communication but also increase the potential for exposure to negative content, such as hoaxes, digital violence, and unverified information. In addition, overuse of technology can lead to social isolation, where individuals interact more through screens rather than building interpersonal relationships in person. This risks reducing empathy and the quality of interpersonal communication. On the other hand, the rapid flow of information also poses its own challenges, namely the formation of a generation that is less critical in filtering and evaluating the information received. Therefore, comprehensive digital literacy is needed to balance the benefits of technology with awareness of the negative impacts that come with it.

Meanwhile, Rheingold (2000). Also reminds us that the digital age presents a paradox: technologies that bring us virtually closer can also distance us socially, as digital interactions are not always able to replace the quality of face-to-face relationships. Experts also caution that the digital age holds social paradoxes that are important to note. On the one hand, digital technology allows people to connect instantly and across distances through various virtual communication platforms. However, on the other hand, this virtual closeness is often not matched by real emotional or social closeness. Interactions that take place through screens are not always able to replace the quality of such as nonverbal expressions, immediate empathy, and depth of communication. As a result, although a person may appear to be digitally active, they may experience social isolation in real life. This phenomenon is a reflection that technological sophistication needs to be accompanied by an awareness to maintain authentic human connections.

CONCLUSION

Digital transformation in education has become a strategic priority for the Indonesian government in improving the quality and accessibility of learning. Policies such as the Regulation of the Director General of Teachers and Education Personnel Number 7607/B.B1/HK.03/2023 emphasize the importance of using technology to improve the efficiency and effectiveness of teacher and principal performance management.

Web-based training programs, such as "Guru Pembelajar", have shown effectiveness in improving teachers' competencies, especially for those in rural areas, female teachers, and those who have been certified. Training and professional development for teachers is a critical component in technology integration, where teachers need to be empowered with relevant skills and knowledge to optimize the use of technology in the learning process.

However, challenges remain, including gaps in access to technology and training across the region. Factors such as age, geographical location and socioeconomic status affect teachers' ability to adopt digital technology. To address this, a holistic approach is needed that includes continuous training, development of digital literacy and integration of technology in the curriculum. Institutional support and supportive policies are also important to ensure that all teachers have equal opportunities to develop their professionalism in the digital era.

Overall, digital transformation in Indonesian education has great potential to improve the quality of learning and equalize access to education. Supportive policies, effective training programs and ongoing support will be key in realizing adaptive and innovative teacher professionalism in the digital era.

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