

SCHOOL POLICY STRATEGIES AND CHALLENGES IN PREPARING DIGITAL LITERACY AND CODING LEARNING IN THE INDEPENDENT CURRICULUM ERA AT SDN PINGGIR PAPAS II

Ahmad Fauzan¹, Ali Armadi², and M. Misbahudholam Ar³

¹ Universitas PGRI Sumenep, Indonesia

² Universitas PGRI Sumenep, Indonesia

³ Universitas PGRI Sumenep, Indonesia

Corresponding Author:

Ahmad Fauzan,

Department of Primary School Teacher Education, Faculty of Teacher Training and Education, Universitas PGRI Sumenep.
Jl. Trunojoyo, Gedung Barat, Gedung, Batuan District, Sumenep Regency, East Java, Indonesia

Email: ahmadfauzaan062@gmail.com

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Abstract

The development of information and communication technology in the 21st century requires the Indonesian education system to undergo profound reforms, one of which is through the implementation of the Independent Curriculum, reinforced in Permendikdasmen Number 13 of 2025. This curriculum prioritizes the development of holistic competencies, including digital literacy and coding learning as a foundation for computational, logical, and problem-solving thinking skills. This study aims to describe the school policy strategy, challenges, and efforts to overcome them at SDN Pinggir Papas II. The study used a qualitative, descriptive case study approach. Data collection was conducted through interviews, observations, and documentation with the principal, teachers, and students. The results show that the school has implemented strategies such as developing internal policies, allocating lesson hours, an unplugged approach, and limited facility support. The main challenges include limited infrastructure, developing teacher competencies, and disparities in student access to technology. The school responded through flexible methods and simplifying materials. In conclusion, the policy has been implemented but is not optimal, so ongoing training and more equitable facility support are needed.

Keywords: School policy, digital literacy, coding learning, Independent Curriculum, elementary school



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INTRODUCTION

The development of information and communication technology in the 21st century has brought about profound changes in various aspects of life, including the world of education . Education in the Industry 5.0 era requires teachers to adaptive to technology And innovative in designing contextual learning And interactive (Ar et al ., 2025) . Education in the future Nowadays, education is no longer solely focused on mastering material, but rather requires students to possess competencies known as the 4C skills: critical thinking, creativity, collaboration, and communication (Megawati, 2025). This change has become the primary foundation for reforming the education system in Indonesia, one of which is through the implementation of the Independent Curriculum.

The Independent Curriculum is a new paradigm designed to address the challenges of the times, as stipulated in the Regulation of the Minister of Primary and Secondary Education Number 13 of 2025. The regulation explains that the curriculum in primary and secondary education is designed to develop the full potential of students, encompassing aspects of knowledge, skills, and character building. This policy also provides extensive flexibility for educational units to develop contextual, locally relevant, and student-centered learning. This aligns with the mandate of Law Number 20 of 2003 concerning the National Education System, which states that education aims to develop abilities and shape the character and civilization of a dignified nation, while simultaneously increasing mastery of science and technology.

Furthermore, the direction of national education policy is also reinforced in Government Regulation Number 17 of 2025, which encourages increased digital literacy for the public and the provision of supporting facilities, especially for children. More specific policies related to programming materials are outlined in the Decree of the Minister of Primary and Secondary Education Number 127 of 2025, which serves as a guideline for the introduction of coding and Artificial Intelligence learning starting from the elementary school level. According to this regulation, these materials will be gradually implemented in grades V and VI of elementary schools starting in the 2025/2026 academic year.

The concept of digital literacy itself has undergone significant development. While initially understood solely as the ability to read and write, digital literacy is now defined as the ability to understand, evaluate, and create content in various forms through digital media (Gilster, 1997; Safitri et al., 2020). Digital literacy also forms the basis for developing lifelong learners, who are able to access open learning resources and learn independently (Sofiroh et al., 2025).

In line with strengthening digital literacy, coding learning has begun to be developed in elementary schools. Coding is not simply the activity of writing programming code, but rather the process of training computational thinking, logic, and systematic problem-solving skills (Burhanuddin, 2023). This is highly relevant to the characteristics of the Independent Curriculum, which prioritizes an in-depth learning approach, conceptual understanding, and the relevance of the material to real life.

However, in practice, the implementation of this policy has not always run smoothly in every educational unit. Initial observations at SDN Pinggir Papas II revealed that the school has demonstrated a strong commitment by incorporating coding learning into its operational curriculum, allocating two hours of lessons per week, and officially registering it in the Basic Education Data (Dapodik) system. Institutional support from the principal, operators, and teachers is evident.

However, there is a gap between formulated policies and implementation on the ground. One of the most noticeable obstacles is the imbalance between the number of students and the availability of technological devices such as computers or laptops . This make The plugged learning approach , based on digital tools, hasn't been optimal. As an adaptation, teachers at the

school are increasingly using an unplugged approach, which involves teaching coding concepts without electronic devices, instead utilizing simple media and logic games.

In addition to infrastructure, teacher competency readiness is also a concern. Most teachers are still in the material mastery stage, due to limited opportunities for specialized training. As a result, the material presented often has to be simplified to be understandable to elementary school-aged children. Furthermore, although government assistance in the form of smartboards has been provided, their utilization is not evenly distributed and depends heavily on the initiative of individual educators. Another issue that has emerged is the unequal access to technology in students' homes, where not all students have devices or internet access. Nevertheless, student enthusiasm for this new material appears quite high, despite some initial confusion.

Based on the real conditions in the field, this research was designed to answer three main questions:

1. What is the school's policy strategy in preparing digital literacy and coding learning in the independent curriculum era at SDN Pinggir Papas II?
2. How challenges faced school in implement digital literacy and coding learning ?
3. How effort school in overcome challenge implementation digital literacy and coding learning at SND Pinggir Papas II?

Objective study This is For For know strategy policy school in prepare digital literacy and coding learning in the curriculum era independence at SDN Pinggir Papas II, To know What just challenges faced school in implement digital literacy and coding learning , For know effort school overcome challenge implementation digital literacy and coding learning at SND Pinggir Papas II.

RESEARCH METHOD

This research used a qualitative approach with a descriptive case study (Creswell, 2017). This approach was chosen because the researcher wanted to obtain a complete, in-depth, and factual picture of the implementation of school policies. The research location was SDN Pinggir Papas II, Kalianget District, Sumenep Regency. This location was chosen based on the consideration that the school had begun implementing coding learning at the elementary level and its location made it easy for the researcher to reach the location. The research period lasted for four weeks according to the agreed schedule.

Research Design

This research used a qualitative approach with a descriptive case study (Creswell, 2017). This approach was chosen because the researcher wanted to obtain a complete, in-depth, and factual picture of the implementation of school policies. The research location was SDN Pinggir Papas II, Kalianget District, Sumenep Regency. This location was chosen based on the consideration that the school had begun implementing coding learning at the elementary level and its location made it easy for the researcher to reach the location. The research period lasted for four weeks according to the agreed schedule.

The research subjects were determined using purposive sampling, which involves selecting informants based on specific considerations and those deemed most familiar with the problem under study. Informants included school principals, teachers, and students. Data sources were divided into two categories:

1. Primary data: obtained direct through structured interviews and unstructured observations.
2. Secondary data: in the form of official school documents, activity archives, guidebooks, and supporting literature.

Data collection techniques used included interviews, observation, and documentation. Data analysis followed the Miles and Huberman model, including data reduction, data presentation, conclusion drawing, and verification. Data validity was tested using criteria such as credibility, transferability, dependability, and confirmability using source triangulation techniques.

Research Target/Subject

The research subjects were determined using purposive sampling, which involves selecting informants based on specific considerations and those deemed most familiar with the problem under study. Informants included school principals, teachers, and students.

Research Procedure

Data sources were divided into two categories:

1. Primary data: obtained direct through structured interviews and unstructured observations.
2. Secondary data: in the form of official school documents, activity archives, guidebooks, and supporting literature.
3. Instruments, and Data Collection Techniques.

Data collection techniques used included interviews, observation, and documentation. Data analysis followed the Miles and Huberman model, including data reduction, data presentation, conclusion drawing, and verification. Data validity was tested using criteria such as credibility, transferability, dependability, and confirmability using source triangulation techniques.

Data Analysis Technique

The data collection techniques used in this research are:

The type of interview used in this study was a structured interview . Structured interviews are used as a data collection technique when the researcher or data collector knows exactly what information they will obtain. Therefore, when conducting the interview, the data collector prepares a research instrument in the form of written questions with pre-determined alternative answers.

The type of observation used in this study is unstructured observation. Unstructured observation is an observation that is not systematically prepared regarding what will be observed. Unstructured observation is more flexible and does not use standard guidelines. Researchers observe the situation as a whole and note anything they consider relevant. This technique allows researchers to capture phenomena that may be unexpected, but data analysis can be more complex due to the lack of structure. Therefore, it can be concluded that observation is a very useful data collection technique for obtaining natural and in-depth data about a phenomenon or behavior. This technique is especially useful in qualitative and exploratory research, where researchers need a thorough understanding of the research context (Romdona, 2025). The documentation method in this study was used to supplement data from interviews and observations. The documentation method is a data collection technique that involves studying documented data (Saadi, 2025)

RESULTS AND DISCUSSION

School Policy Strategies in Preparing for Digital Literacy and Coding Learning

Based on the data obtained, SDN Pinggir Papas II has developed strategic steps aligned with the direction of national education policy. These strategies do not stand alone but are integrated into the school's annual work plan. The strategies implemented include:

Planning and Arranging Curriculum Structure. The school has designated coding as a stand-alone subject, allocating two hours of instruction per week. This has been officially

recorded in the education administration system, Dapodik. This policy demonstrates the institution's commitment to responding to the demands of the Independent Curriculum, which prioritizes 21st-century skills. From an educational policy perspective, this decision represents a mutually agreed-upon guideline for achieving educational goals (Purba, 2021).

Implementation of Flexible and Adaptive Learning Approaches. Due to the limited number of devices, the primary strategy developed by teachers is an unplugged approach. Learning is conducted without relying on computers, but instead uses games, worksheets, and real-world objects to practice concepts of algorithms, sequences, and logic. This approach aligns closely with the principles of the Independent Curriculum, which prioritizes flexibility and learning tailored to the specific needs of the educational unit. Learning strategies are also supported by visual media such as simple animations or available whiteboard aids (Ramadhan et al., 2020).

Gradual Development of Teacher Competence. Schools encourage teachers to continue learning and participate in available training, even though resources are limited. Teachers adapt materials by simplifying technical concepts to make them easier for elementary school students to understand. This is crucial because teachers' digital literacy skills determine the quality of learning (Putra et al., 2023). Furthermore, collaboration is fostered among teachers to share experiences and teaching materials.

Optimal Utilization of Existing Facilities. The school has received assistance in the form of smartboards. Although there are no specific guidelines for their use, teachers have taken the initiative to use them as visual displays to make learning more engaging and interactive.

Challenges of Implementing Digital Literacy and Coding Learning. Policy implementation at SDN Pinggir Papas II faces various obstacles common in areas with limited resources. Based on observations and interviews, these challenges include:

Limited Infrastructure and Technology Access. Amount computer or the availability of laptops is not commensurate with the number of students. Furthermore, the stability of electricity and internet connections is sometimes uncertain. This aligns with literature findings that indicate infrastructure is a major barrier to technology-based learning in underdeveloped areas. Without adequate support, coding lessons, which should be hands-on, become more theory-based or simulation-based (Hasanah, 2024).

Uneven teacher competency readiness. Part big teacher yet have a specialized educational background in informatics or programming. The training received is still general and not sustainable. However, according to Van Meter and Van Horn, the characteristics of policy implementers are one of the determining factors in the success or failure of a program (Swandi, 2025). The lack of teacher skills often results in limited variety in the delivery of material.

Gap in Students' Digital Literacy Levels. Students' understanding of technology varies widely. Some are already familiar with gadgets, while many are only familiar with technology within the school environment. At home, not all students have access to devices or the internet. This prevents digital literacy indicators such as content evaluation and knowledge organization from developing optimally (Gilster in Subagjo, 2023).

Adapting Material to the Child's Developmental Level. Coding concepts are initially difficult for students because they aren't used to thinking coherently and logically. Teachers must work extra hard to transform technical language into simple, contextual language.

School Efforts to Overcome Challenges. In the face of the above obstacles, schools are not passive but are adapting their strategies. These efforts include:

Changing the mindset that learning coding does not always have to use a computer, but rather trains computational thinking patterns.

1. Develop independent teaching materials that are adapted to facility conditions.
2. Using project and game-based learning methods to make students more enthusiastic.
3. Communicate with parents to support learning at home even without digital tools.

Further Discussion. Based on the findings, the strategy implemented by SDN Pinggir Papas II reflects the meaning of education policy as decisions tailored to the local context while remaining steadfast to national goals (Purba, 2021). This aligns with the characteristics of the Independent Curriculum, which grants schools and teachers the freedom to innovate without departing from established competency standards (Tuerah, 2023).

The digital literacy developed at this school doesn't yet fully encompass all of Gilster's proposed indicators, but the foundation for a safe and responsible digital culture is beginning to be laid. This is crucial, considering that the ITE Law also serves as the legal basis for internet ethics, which students must understand from an early age.

Learning Coding in this school focuses on the thinking process, not the final program outcome. This aligns with Hignasari's (2022) opinion that teaching children to code aims to develop problem-solving, logic, and creativity. Challenges, such as limited tools and teacher competency, are common and align with previous research by Awaluddin (2025) and Megawati (2025).

According to Grindle, good policies are not only judged by their precise formulation, but also by how they are implemented in practice. Here, flexibility is key to success, even if the results are not perfect. This situation demonstrates that limited resources are not an absolute barrier, but rather a challenge for teachers to be creative in creating meaningful learning.

CONCLUSION

SDN Pinggir Papas II's policy strategy includes structured planning, implementation of unplugged methods, adjustment of materials, and maximum utilization of existing facilities. The main challenges are the imbalance in infrastructure, teacher competencies that are still developing, and differences in students' levels of digital literacy and access to technology. Schools overcome these obstacles by adapting learning methods, simplifying materials, and building collaboration between teachers and parents.

AUTHOR CONTRIBUTIONS

Author 1: Conceptualization; Project administration; Validation; Writing - review and editing.

Author 2: Conceptualization; Data curation; In-vestigation.

Author 3: Data curation; Investigation.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

REFERENCES

- Ar, MM, Armadi, A., Astuti, YP, & Astutik, C. (2025). *21st Century Innovation: Strengthening Teacher Competence in Utilizing Adaptive Learning Media Based on Augmented Reality with the Assistance of the Asemblr Edu Application in the Industrial Era 5 . 0 . 4* (3), 612–626.
- Ahmad Saadi. (2025). Efficient Data Collection in Classroom Action Research: Techniques, Tools, and Challenges. *Journal Homepage*, 1(1), 19-29.
- Arby, AR, Hadi, H., & Agustini, F. (2019). The Effectiveness of Literacy Culture on Learning Motivation.
- Creswell, J. W. (2017). *Research Design*.
- Damanik, MR, Manik, RL, & Gaddafi, M. (2025). *Quantitative Research Methods: Concepts, Types, Stages, And Advantages*.

- Elisa. (2013). Definition, Role, and Function of Curriculum.
- Erlangga, YB (2021). Implementation of Pop-Up Media in Science Learning During the Covid-19 Pandemic.
- Fadraneli, H. (2025). Learning to Code Since Elementary School: How Important Is It for Character and Future Skills?
- Gilster, P. (1997). Digital Literacy.
- Hasbullah. (2015). Education Policy: From the Perspective of Theory, Application, and Objective Conditions of Education in Indonesia. Jakarta: Raja Grafindo Persada.
- Hignasari, LV (2022). Coding Learning and Coding Course Business Opportunities in the Post-Covid-19 Digital Era.
- Hough, J. R. (1984). Educational Policy: An International Survey.
- Intaniasari, Y., & Utami, RD (2022). Growing Culture Read Students Through Digital Literacy in Learning.
- Khoirurrijal. (2022). Development of the Independent Curriculum.
- Megawati. (2025). Transformation of 21st Century Learning in Elementary Schools: Integration of Digital Literacy in the Independent Curriculum.
- Moleong, LJ (2021). Qualitative Research Methodology.
- Novak, J.D. (2010). Using Knowledge.
- Nugroho, AT (2022). Digital Literacy in the 21st Century Learning Era.
- Pratiwi, EI (2023). Impressions of the Independent Learning Curriculum on Elementary School/Islamic Elementary School Learning.
- Purba, S. (2021). Education Policy Analysis.
- Putra, AE, Rohman, MT, & Hidayat, N. (2023). The Influence Digital Literacy on Teachers' Pedagogical Competence.
- Romdona, S. (2025). Data Collection Techniques: Observation, Interviews, and Questionnaires.
- Situmorang, HB, Rahayu, PM, & Munawwarah, R. (2023). Independent Learning Curriculum Policy in Schools.
- Sofiroh, et al. (2025). Integration of Digital Literacy in the Independent Curriculum.
- Sop Syafei, et al. (2025). Curriculum & Learning Book.
- Subagjo, A. (2023). Digital Literacy Skills in Indonesian Language Learning.
- Sugiyono. (2018). Quantitative, Qualitative, and R&D Research Methods.
- Sumiati, ETI (2020). Benefits of Digital Literacy for Society and the Education Sector.
- Swandi, C., et al. (2025). Analysis of Education Policy in Elementary and Secondary Schools.
- Syafaruddin. (2008). Effectiveness of Education Policy.
- Tuerah. (2023). Independent Curriculum from a Theoretical Study Perspective.
- Law No. 20 of 2003 concerning the National Education System.
- Law No. 11 of 2008 in conjunction with No. 19 of 2016 in conjunction with No. 1 of 2024 concerning ITE.

Minister of Education and Culture Regulation No. 13 of 2025 concerning Primary & Secondary Education Curriculum.

Minister of Education and Culture Decree No. 127 of 2025 concerning Guidelines for the Implementation of Coding & AI.

Government Regulation No. 17 of 2025.

Widiana, IW (2022). The Impact of Using Project Assessment-Based E-Learning.

Widianto, F., & Nasution, MA (2023). The Influence of Consumer Behavior on Sales Levels.

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