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Implementation of the Learning Digitalization Policy in Improving the 21st Century Skills of Elementary School Students

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ABSTRACT

This study aims to analyze the implementation of the learning digitalization policy in improving 21st century skills at SDN 1 Sukamanah. Along with the demands of the industrial revolution 4.0 era, schools are required to integrate technology in managerial and pedagogical processes. This study uses a qualitative approach with a case study method. Data was collected through in-depth interviews with principals and teachers, field observations, and documentation studies. Data analysis was carried out using miles and huberman. The results of the study show that: (1) Planning is carried out by integrating the vision of digitalization into the KOS and RKAS documents with the long-term target of developing multimedia spaces by 2026; (2) Organizing is carried out through the formation of a Media Team and the division of additional ICT tasks for teachers through SKBM to build a collaborative culture; (3) Implementation is shown through the use of *Interactive Flat Panel* (IFP) devices and digital platforms such as *Quizizz* and *Canva* to hone students' creativity and critical thinking; (4) Evaluation is carried out through monthly meetings and *coaching clinics* to overcome internet infrastructure barriers. The conclusion of the study emphasizes that the effectiveness of the implementation of digitalization policies in realizing students' 21st century skills is highly dependent on the consistent synchronization of POAC management stages. The success of digital transformation does not only rely on the availability of infrastructure, but also on strengthening systematic and sustainable school managerial governance.

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1. INTRODUCTION

National education has the main mandate to form character education and the integrity of students, as mandated in Law Number 20 of 2003 concerning the National Education System. In addition, it is also strengthened in Presidential Instruction Number 7 of 2025 concerning the Acceleration of the Implementation of the Development and Revitalization Program of Early Childhood, Basic Education, and Secondary Education Units, the Development and Management of Garuda Superior High School, and the Digitalization of Learning and Presidential Regulation Number 79 of 2025 concerning the Updating of the Government Work Plan for 2025.

This research focuses on the importance of implementing digitalization policies in basic education, especially at SDN 1 Sukamanah Purwakarta, to improve the 21 eternal skills that students urgently need in this modern era. Enduring skills 21 including critical thinking skills, collaboration, communication, creativity, and digital literacy, have been identified as one of the crucial aspects of global education. This is reinforced by various studies that emphasize that mastery of these skills is an important requirement to equip students to face the challenges of life and the world of work in the 21st century (Budianto et al., 2021; Hu, 2023; Wardani et al., 2024).

21st century education seeks to produce individuals who not only excel academically, but also have the skills and readiness to innovate. In Indonesia, as stated in education policy, education reform has directed attention to 21st century skills development, which is in line with the global targets set by UNESCO (Budianto et al., 2021; Alotaibi & Alghamdi, 2022). The implementation of project-based learning and digital storytelling models has been shown to be effective in improving these skills, with a number of studies showing a positive relationship between the use of these methods and students' mastery of 21st century skills (Uysal, 2021; Fajri et al., 2021).

Digitalization in learning not only allows access to a wider range of information resources, but also encourages more interactive and collaborative learning methods. As noted by some researchers, the use of digital systems in teaching can increase student engagement and facilitate the development of better problem-solving skills (Kahraman & Bicen, 2022; Sahidah & Sulistyani, 2022). In the context of the COVID-19 pandemic, digital transformation in education has become very important, showing that teachers need to implement strategies that support the development of students' digital competencies, in order to adapt to changing learning dynamics (Kahraman & Bicen, 2022; Sahidah & Sulistyani, 2022).

Theoretically, GR Terry's management theory, which focuses on *the Planning, Organizing, Actuating, and Controlling* (POAC) approach with the implementation of the learning digitalization policy to improve 21st century skills at SDN 1 Sukamanah Purwakarta, is very relevant and important. In the context of education, POAC can be used as a framework to manage the digitalization process aimed at improving students' skills in facing the challenges of the 21st century.

The planning process in education management is essential, especially in designing curricula that are relevant to the demands of 21st century skills. Research states that various skills such as critical thinking, creativity, collaboration, and communication need to be integrated in the curriculum, including in the Independent Curriculum which is being implemented in various schools, including at SDN 1 Sukamanah. This planning includes the development of a curriculum that is aligned with the needs of students as well as the technology required in digital learning, becoming an integral part of a modern education management strategy (Rosyid & Mubin, 2024).

Organizing in the context of digitalization of learning involves organizing the resources needed to support the implementation of technology in education. This includes the provision of adequate hardware and software, as well as training for teachers and students in the use of these technologies (Yahya, 2025, Nisa et al., 2023). The formation of an educational innovation driving team is also part of the organizing step, where the participation of all stakeholders, including teachers, students, and parents, is essential to create a supportive learning climate (Kusmawati et al., 2023).

The implementation of the learning digitalization policy needs to be accompanied by continuous training and competency development for teachers in using educational technology and innovative teaching methods. In this context, studies show that 21st century skill development can be facilitated

through the use of various digital media in learning, such as e-modules and blended learning models (Safitri, 2022; Abbas & Marwa, 2023; Azzahra et al., 2023). Active involvement of students in project-based learning and digital technology is a must to encourage the mastery of these skills (Kusmawati et al., 2023).

Control in the education digitalization process involves assessing and evaluating the effectiveness of the implemented learning programs. This includes monitoring student development in developing 21st century skills, as well as constructive feedback from various parties (Herlina, 2023; Aravik & Tohir, 2022). Research shows that conceptualized evaluation will produce data that can be used for further improvement in education curriculum and policies (Nurazizah et al., 2025; Amrullah et al., 2024). A transparent and accountable management system will increase the effectiveness of control in education (Yahya, 2025).

Overall, the application of GR Terry's management theory with the POAC approach in the context of digitizing learning at SDN 1 Sukamanah is very supportive of the development of 21st century skills needed by students in the current era of globalization. By planning, organizing, implementing, and controlling effectively, it is hoped that the goal of education that is adaptive and responsive to the changing times can be achieved.

The reality on the ground often shows that there is a crucial gap. The gap in the implementation of the learning digitalization policy at SDN 1 Sukamanah Purwakarta is manifested in several challenges experienced in the field, which affect the effectiveness of technology-based learning. In the context of education policies aimed at improving 21st century skills, there are several factors that contribute to this gap.

One of the significant gaps is the ability of educators to operate digital technologies and new teaching methods. Research shows that teachers often struggle to adapt to new technologies, either due to a lack of adequate training or gaps in their digital skills. These limitations have the potential to hinder the implementation of innovative and interactive teaching methods, which are supposed to improve students' skills.

Parental participation in children's education is also an important factor that can affect the successful implementation of learning digitalization. Parental involvement in supporting the use of technology at home can play an important role in strengthening 21st-century skills taught in schools. However, many parents may not have the knowledge or resources to support digital learning, thus increasing the gap between students.

Another gap arises from a curriculum that has not fully integrated digitalization in the learning plan. Despite policies that support digitalization, the implementation of a more conventional curriculum can hinder the development of the skills needed. A study highlights that while teachers are aware of the importance of 21st-century skills, they are often stuck in traditional teaching methods that are inadequate to equip students to face the realities of the future.

Finally, evaluation and supervision of policy implementation is also a challenge in itself. Research has found that the lack of mechanisms to assess the effects of digitalization and education policies can lead to ignorance about what works and what doesn't (Sugianti et al., 2024). Without consistent oversight and clear evaluation, it is difficult to implement the necessary improvements in educational policies and practices.

Previous research by Hikamudin et al. discussed strategies to improve digital literacy and numeracy in elementary schools through digital applications. This study found that the application of digital applications in the classroom can help students understand basic concepts of mathematics and literacy in a more interactive way, Hikamudin et al. (2023). This shows that digital media can serve as an important tool in effective learning, in line with the digitalization policies to be implemented.

In a study conducted by Sulak et al., the relationship between digital literacy and lifelong learning tendencies in primary school teachers was explored. The findings show that although teachers have moderate technological skills, they are aware of the importance of digital literacy in improving student

learning outcomes (SULAK et al., 2022). This shows the need for better training for teachers so that they can implement technology in teaching effectively.

Research by Suwarto et al. explored the practice of digital literacy in elementary schools in Yogyakarta. The results show that the role of educators is vital in facilitating students' digital literacy. The resulting recommendations are the need to improve infrastructure and support from school management to support the use of technology in learning (Suwarto et al., 2022). This research is relevant because it informs how the educational environment should be prepared to support digitalization.

In a recent study, Hapidin et al. investigated students' readiness to enter school, which includes social skills and parental support (Hapidin et al., 2024). This is particularly relevant in the context of digitalization policies, where support from parents and the social environment can have a major impact on the successful implementation of technology in education. Environmental readiness and social support will contribute to the improvement of students' 21st century skills.

Departing from the gap between policy expectations and practices at SDN 1 Sukamanah, this research becomes actual because it discusses the current policies that are ongoing, crucial because it concerns the foundation of 21st century skills at elementary school age, and meaningful because it aims to identify and describe the digitalization of learning policies in improving the 21st century skills of elementary school students.

The purpose of this study is to explore how the implementation of digitalization policies in learning at SDN 1 Sukamanah Purwakarta can improve students' 21st century skills. The influence of this policy is expected to provide a clearer picture of the challenges and opportunities faced by teachers and students in adopting technology in the teaching and learning process. The results of this research will contribute to the development of more effective education policies, especially in the context of digitizing learning at the basic education level in Indonesia.

Therefore, this research is very important to be carried out by focusing on how the implementation of the learning digitalization policy implemented at SDN Sukamanah can improve the lasting skills of 21 elementary school students.

Based on the background of the problem that boils down to the focus of research on the Implementation of the Learning Digitalization Policy in improving the Eternal Skills of 21 Students at SDN 1 Sukamanah in Purwakarta Regency. The explanation of the formulation of the research problem according to the image above means that the raw input component together with the instrumental input and environmental input components are used as input materials to be processed together with the Implementation of the Learning Digitalization Policy in improving the Eternal Skills of 21 Students with the aim of producing outputs to improve the 21st century skills of elementary school students. If the output and outcome results are not in accordance with expectations, this is feedback to repeat to the raw input for the process of improving the implementation of the learning digitalization policy in improving the skills of 21st century elementary school students. This process takes place continuously in order to improve the 21st century skills of elementary school students, with an explanation of the content of each component:

a) Input Components

This component consists of Insrumental Input, Raw Input, and Environmental Input. Where the raw input is the student, the instrumental input contains the policy. Meanwhile, environmental input includes the environment and school elements that are with students such as principals, supervisors, teachers, parents, and other stakeholders or policy makers.

b) Process Components

This component is the processing of the implementation of the learning digitalization policy in an effort to improve the 21st century skills of elementary school students which consists of planning, organizing, implementing, and evaluating/control.

c) Components Output

This component is the output of the process that has been carried out to implement the learning digitalization policy in an effort to improve the skills of 21st century elementary school students, namely the improvement of 21st century skills of elementary school students.

d) Components Outcome

This component is the final result that has an impact on students, namely model students.

This research is limited to a study on the implementation of the learning digitalization **policy** implemented in elementary education units in order to improve the 21st century skills of elementary school students. In order for the research to be more directed and in-depth, the scope of research is focused on four aspects of education management, namely planning, organizing, implementing, and monitoring policies. Given the breadth of the problem studied, the researcher limited the problem to the following indicators:

a. Planning Aspects

In the planning aspect, this study will only analyze the extent to which official school documents such as RKS, KOS, or Teaching Modules explicitly list targets, strategies, and resource allocation intended for digitalization. Particular emphasis is placed on how the planning integrates the goals for developing 21st Century Skills (4Cs), namely Creativity, Collaboration, Communication, and Critical Thinking, ensuring that the study does not extend to school program planning in general, but rather only to components directly related to the use of technology for the improvement of students' skills.

b. Organizational Aspects

In the aspect of organization, this study will examine how SDN 1 Sukamanah organizes the organizational structure, division of tasks, and the use of digital resources in the context of policy implementation. The analysis will be limited to the effectiveness of organizing the use of ICT infrastructure (devices and networks) as well as the training and development programs provided to teachers and students. The purpose of these restrictions is to understand how institutional structuring and school logistics specifically support and manage the implementation of digitalization so that 21st Century Skills can be properly facilitated.

c. Implementation Aspects

In the implementation aspect, the research is limited to direct observation and analysis of digital learning practices that occur in the classroom. This research will be limited to observing how teachers and students of SDN 1 Sukamanah actually apply certain digital technologies or platforms to achieve learning goals. The main focus is on proven learning activities explicitly designed to stimulate and enhance students' four 21st Century Skills, such as digital collaborative projects or critical problem-solving using online resources. These limitations ensure the study has a strong empirical data depth of core activities in the classroom.

d. Aspects of Supervision

In the aspect of supervision, the research is limited to the mechanisms and monitoring/evaluation instruments implemented by the school to monitor the progress of the implementation of digitalization and its impact on students' 21st Century Skills. The focus of the study was limited to the evaluation data collected by the school and the follow-up taken based on the findings of the supervision. It also includes the identification of supporting and inhibiting factors detected through internal monitoring processes. With this limitation, the research can conclude the effectiveness of digitalization management comprehensively from the perspective of feedback and continuous improvement.

With these restrictions, research will have a sharp and in-depth focus on the implementation of learning digitalization policies from a comprehensive management cycle perspective

2. METHODS

1. Approach

This research uses a qualitative approach because it focuses on an in-depth understanding of the process and implementation of learning digitalization policies in improving the skills of 21st century elementary school students at SDN 1 Sukamanah, Purwakarta Regency. This approach allows researchers to explore meaning, values, and patterns of action through the perspective of subjects who are directly involved in the school's social context. Qualitative research is also chosen because it is relevant to study phenomena that are complex, contextual, and require subjective interpretation based on field situations.

2. Method

The method used is descriptive-analytical with a case study design. Descriptive research aims to explain the actual conditions related to the digitalization of learning policy, while the analytical approach is used to interpret field findings through the process of reduction, categorization, and thematic analysis. The case study design was chosen because the research focuses on two specific schools (SDN 1 Sukamanah) as the unit of analysis, so that the results of the study describe specific and in-depth empirical realities in the policy context.

3. Research Techniques and Instruments

a) Research Techniques

The data in this study was collected through three main techniques, namely:

1) In-depth interviews
   Interviews were conducted with school principals, teachers, school committees, and related parties to gather information about the process of planning, organizing, implementing, and supervising learning digitalization policies in improving the 21st century skills of elementary school students.
2) Participatory observation
   Observations were made on school activities such as learning activities, teaching and learning activities, interaction with school residents, and the implementation of the learning digitalization policy in school management.
3) Documentation Studies
   Data was obtained from official school documents such as vision-mission, school curriculum, teaching module documents, activity reports, meeting archives, and other minutes of the implementation of the learning digitalization policy.
   These three techniques were chosen so that the data obtained were triangulative and could be validated comprehensively according to the character of qualitative research.

b) Research Instruments

1) Research Grid
2) Data Collection Techniques
3) Documentation Study Guidelines
4) Interview Guidelines
5) Observation Guidelines

4. Location and Research Subject

a) Research Location

The research will be carried out at SDN 1 Sukamanah which is located in Kp. Pilar RT.11/04, Sukamanah Village, Bojong District, Purwakarta Regency, West Java postal code 41164.

b) Research Subject

The research subjects in this study consist of all parties involved in the digitalization of learning policy in improving the skills of 21st century elementary school students at SDN 1 Sukamanah,

Purwakarta Regency. Subject selection was carried out through *purposive sampling* techniques, which are the determination of informants based on the relevance of their roles, active involvement, and knowledge of the research focus. The main informants in this study are the principals of each school, as they play the role of leaders, policy makers, and main drivers of the implementation of learning digitalization policies in improving 21st century skills. School principals are key sources of information related to planning, organizing, implementing programs, as well as monitoring and evaluating the digitalization of learning policies.

In addition to school principals, this research also involves coordinating teachers who are responsible for the implementation of programs and the implementation of learning digitalization policies in schools. Classroom teachers are also used as subjects because they have direct interaction with students in the digital learning process in the classroom, so that they can provide empirical data on the implementation of digitalization policies in learning practices. Students were selected as supporting subjects to obtain information about changes in behavior, discipline, and internalization of 21st century skills as a result of the implementation of the learning digitalization policy.

Thus, the subjects of the study reflect a comprehensive representation of all elements of the school that play a role in improving the 21st century skills of elementary school students.

5. Data Validity

Referring to the opinions of Lincoln and Guba cited by Sapto Haryoko, Bahartiar, and Fajar Arwadi (2020:392), the validity of data in qualitative research is determined through several examination techniques. The technique includes four types of tests, namely:

a) Credibility as a form of internal validity,
b) Transferability related to external validity,
c) Dependability as the equivalent of reliability, and
d) A confirmability that indicates the level of objectivity of the findings.

6. Data Analysis Techniques

Data analysis in qualitative research, according to Miles & Huberman in Sapto Haryoko, et al. (2020:195), is a series of activities that focus on the process of reducing, presenting, and verifying data until a conclusion is finally obtained. They explained that data reduction is the process of selecting and sorting important data from the data set that has been obtained. Data presentation means displaying information that has been arranged and organized well so that it is easy to understand, then verification is carried out to ensure the validity of the data. Meanwhile, drawing conclusions is understood as the process of providing interpretation or meaning to the data that has been analyzed. Miles & Huberman also asserts that the essence of qualitative data analysis is to give meaning to data in its context, not to turn it into numbers or do calculations.

a) Data Reduction

Data reduction is a process in which a researcher conducts an initial review of the data that has been produced by conducting data testing in relation to the aspect or focus of the research.

Reduction refers to the process of simplifying or reviewing data. At this stage, the researcher organizes the data obtained from the field, compiles a summary, and then groups it into classifications and categories that match the focus of the research. Through this process, researchers can determine which data is relevant and supports the research, as well as which data is less relevant or irrelevant.

The data reduction stage is the process of giving codes or labels to data obtained during research. At this stage, the researcher names or groups the findings so that certain themes or categories appear. The theme is then filtered back through a reduction process. The coding process was carried out by rewriting all field records obtained, both from in-depth interviews and observations. If the interview is recorded, the first step is to create a transcript of the recording. After the notes are neatly

rewritten and the transcript is completed, the researcher reads them again to ensure their compatibility with the field records (Afrizal in Sapto Haryoko, et al. (2020:204)).

b) Data Presentation

The data presentation stage is a follow-up step after the initial process in the form of data reduction. At this stage, the information that has been sorted and simplified is then rearranged in a more systematic form, so that the relationships between categories, patterns, and initial findings can be seen more clearly. The presentation of data also serves as a basis for researchers to draw temporary conclusions and determine the next steps of analysis in a more directed manner.

According to Usman and Purnomo in Sapto Haryoko, Bahartiar, and Fajar Arwadi (2020: 211–212), too much data piles actually make it difficult for researchers to get a complete picture. Therefore, it is necessary to first reduce the data, then display it in the form of data displays, for example through matrices, relationship networks, charts, graphs, and other visual forms. In this way, researchers can more easily understand and control the data, so that they are no longer burdened by the amount of information collected.

c) Conclusion drawing and verification

The conclusion and verification stage is a continuation of the previous two stages, namely data reduction and data presentation. At this stage, the researcher begins to formulate the meaning of all the information that has been collected and re-examine the findings to confirm their truth. The verification process is carried out through re-checking data, comparing with other sources, and ensuring the consistency of findings so that the conclusions produced are truly valid, logical, and accountable. This stage is important because it determines the final quality of the qualitative research results.

d) Data Triangulation

According to Stainback, triangulation is not intended to find a single truth about a social phenomenon, but to broaden and deepen the researcher's understanding of the phenomenon being studied. In other words, the main goal of triangulation is to improve the quality of the researcher's interpretation of the data, not just to ensure that the data is correct or valid. (Sugiyono in Sapto Haryoko, Bahartiar, and Fajar Arwadi (2020:412),

In line with that, triangulation not only serves as a mechanism for checking the validity of data, but also as a strategy to enrich researchers' insights through the use of various sources, techniques, or perspectives in the information collection process. Through triangulation, researchers can see a fact from various points of view so that the resulting meaning becomes more comprehensive and deep. Thus, triangulation not only verifies the data, but also helps researchers understand the context, dynamics, and meanings contained in the data more thoroughly.

There are three data triangulation processes used in the research, namely:

1) Triangulation Data sources

Source triangulation is a procedure to ensure the level of credibility of data by comparing and checking information obtained from various data sources. Through this step, researchers can see the consistency of information between sources, identify differences or similarities in findings, and strengthen the validity of data used in qualitative research. Source triangulation also helps researchers get a more comprehensive and objective picture of the phenomenon being studied.

2) Theoretical Triangulation

Theoretical triangulation is the use of various viewpoints or theoretical frameworks to interpret a set of research data. Through this approach, researchers do not dwell on just one theory, but compare and combine several relevant theories so that the understanding of the data becomes more in-depth and comprehensive. Thus, theoretical triangulation helps to increase the validity of research findings because the results of interpretation are supported by a variety of complementary theoretical foundations.

3) Triangulation Method

Methodological triangulation is an effort to verify data by using various data collection techniques against the same data source**.** For example, the information obtained through interviews is then compared with the results of observations and documentation. If there are differences in findings from the three techniques, it can be considered reasonable because each method has a different perspective on data capture**.** Therefore, the researcher needs to conduct more in-depth clarification with the relevant informant or with other sources to determine which information is most accurate.

According to Moleong in Sapto Haryoko, Bahartiar, and Fajar Arwadi (2020: 421), there are two strategies that can be applied, namely checking the degree of trust in data discovery of qualitative research results with several data collection techniques and checking the degree of trust of several data sources with the same method

3. FINDINGS AND DISCUSSION

3.1 Research Results

Based on the results of data collection through in-depth interviews, participant observations, and documentation studies at SDN 1 Sukamanah, it was found that the implementation of the learning digitalization policy was carried out systematically in accordance with the four management functions of the GR Terry theory (Planning, Organizing, Implementing, and Evaluating). Here is a detailed description of the data findings:

1. Digitalization of Learning Policy Planning

Digitalization policy planning at SDN 1 Sukamanah is carried out by integrating the vision of technology into curriculum and budget documents. Based on the results of the interview with the Principal, this planning has been formalized through the school's official documents:

"Incorporated into the vision, mission and School Operational Curriculum... It is included in the School Activity Plan and Budget (RKAS) for the submission of the creation of a multimedia space." (KS Interview, 2025).

Although the aspect of piety remains the top priority in the School Operational Curriculum document, the digitalization aspect is starting to be placed as the next strategic program. However, the realization of physical infrastructure such as multimedia spaces still faces spatial constraints, so it is planned gradually. The Principal stated:

"The plan is for 2026... The name is right, let alone for multimedia rooms, for children's classes to learn less... But in the Activity Plan and School Budget, you have planned." (KS Interview, 2025).

In addition to physical infrastructure, the planning also targets the enrichment of technology-based curriculum for the future, as the informant revealed:

"The plan ahead... The Importance of Coding in Elementary School Students... to improve mathematical skills and creativity." (KS Interview, 2025).

Observation data shows concrete steps in the form of increasing internet capacity from 20 Mbps to 50 Mbps. This is in line with the RKAS document which shows that there is a budget allocation for the construction of multimedia spaces for 2026 as a solution to the current land limitations.

2. Organizing Learning Digitalization Policy

Organizing is carried out by establishing a clear responsibility structure in ICT management. The Principal explained that this division of duties was authorized through the SKBM:

"The distribution is carried out by adding additional tasks for the Facilities and Infrastructure Sector attached to the SKBM." (KS Interview, 2025).

In addition, the school formed a special unit to manage the digital aspect, as the Principal said "Create a Media Team, which is in charge of managing the digitization of learning and managing the school's social media." (KS Interview, 2025).

This is also strengthened by the results of interviews with teachers who said "yes, a media team was also formed from teachers who are in charge of managing the use of interactive flat panels and other digital related matters." (Teacher Interview, 2025).

Structurally, the main responsibility is still under the coordination of infrastructure. The Principal said, "If the Decree is like that, it is possible to go to the means. The person in charge. Part of the Infrastructure... It's only for asset managers. It's still common." (KS Interview, 2025).

The results of the observation show that technically, organizing in the field is collaborative. Teachers who have higher IT proficiency act as mentors to their peers. The documentation study on the SKBM and the document on the formation of the Media Team confirmed the division of roles in the maintenance of ICT infrastructure and the management of digital learning content.

3. Implementation of Learning Digitalization Policy

The implementation of digitalization at SDN 1 Sukamanah focuses on the integration of technology in intracurricular and extracurricular activities. One of the main instruments used is the Interactive Flat Panel (IFP):

"Using IFP for activities with students, such as gymnastics, Ramadan Islamic boarding schools, watching movies together that instill morals." (Teacher Interview, 2025).

However, this implementation is still constrained by the ratio of the number of tools to the number of classes. The informant revealed:

"The tools are only 2... While here there are 17 classes... The teachers to their classes always bring small speakers and also bring laptops." (Teacher Interview, 2025).

To hone 21st century skills such as critical thinking, teachers utilize digital evaluation platforms:

"Using the Quizziz Application for assessments or competitions between classes to hone critical thinking and collaboration." (Teacher Interview, 2025).

Field observations showed that teachers' enthusiasm reached 70-80% in using technology, even though they had to move multimedia TV sets between classes manually. The documentation study corroborates these findings with evidence of the use of WhatsApp Group, Google Classroom, and the use of the Canva application as a medium for student creativity.

4. Supervision of Learning Digitalization Policy

Supervision and evaluation are carried out periodically through monthly meetings and direct monitoring by the Principal. The evaluation mechanism is described as follows:

"Every month, the first week of the first week is held a monthly meeting... The principal conducts a coaching clinic on the obstacles or problems found." (KS Interview, 2025).

The principal also uses the direct observation method to assess teachers' interest in the use of digital media:

"The evaluation was carried out during the monthly meeting, all of you observations... That's why I can conclude that his desire to use this media is actually great." (KS Interview, 2025).

The results of this supervision are then used as a strategic basis for the school's next policy:

"It is used as a school policy as the basis for making school programs, school budget allocation... to improve 4C skills." (KS Interview, 2025).

The observational findings confirm that this surveillance resulted in tactical solutions, such as the plan to install Mikrotik/*extender* to overcome WiFi coverage limitations. A documentation study of monthly meeting minutes shows that teachers' technical complaints are well documented and form the basis for future budget adjustments to support the development of 4C (*Critical Thinking, Creativity, Collaboration, Communication*) skills.

3.2 Discussion

Based on the analysis of the data that has been presented in the research findings, it is clear that the success of SDN 1 Sukamanah in improving the skills of 21st century students is inseparable from the running of four good management functions carried out by the school.

This discussion will outline how the synergy between field facts and relevant quality management theories (*Grand Theory*), especially GR Terry's theory (POAC), as well as their relevance to 21st century skills.

1. Planning
   Digitalization planning at SDN 1 Sukamanah is in line with G.R. Terry's theory which emphasizes that planning is the process of selecting facts and linking assumptions to formulate necessary activities. In this context, planning is not only administrative through inclusion in KOS and RKAS, but also futuristic by designing coding enrichment programs for the future. This step is the foundation for growing computational thinking that is part of Critical Thinking. Strategically, the school has conducted a needs analysis by planning a multimedia space by 2026, which shows the existence of a long-term vision to provide a digital ecosystem that is able to stimulate students' creativity from an early age through adequate means.
2. Organizing
   In the organizing stage, the school applies the principle of *division of work* by forming a Media Team and incorporating ICT management tasks into the SKBM (Decree on the Division of Teaching Duties). This reflects Terry's theory of determining activities and grouping people into logical structures. This organization is the key to building a culture of collaboration in the educator environment. The existence of a mechanism for disseminating training results from competent teachers to peers shows that school organizations function as a learning community. This structure ensures that the limitations of individual technical abilities can be overcome through teamwork, which indirectly sets an example for students regarding the importance of effective communication in digital organizations.
3. Actuating
   The implementation or mobilization of digitalization in the field shows maximum efforts in mobilizing limited resources. The use of *Interactive Flat Panels* (IFPs) and platforms such as Quizziz or Canva is a tangible form of applying technology to spark Creativity and Critical Thinking in students. In accordance with Terry's theory that *actuating* is an effort to make group members work enthusiastically, observations show high teacher motivation (70-80%) despite having to face device mobility constraints. The integration of WhatsApp Group and Google Classroom in the learning process also strengthens communication skills between teachers and students. This implementation proves that digitalization is not just the use of tools, but a pedagogical transformation that encourages students to be active in the digital ecosystem.
4. Controlling
   The evaluation carried out by the Principal through monthly meetings and coaching clinics is in accordance with Terry's controlling principle, namely measuring the implementation of the plan and correcting deviations. This evaluation is crucial in ensuring that digitalization policies remain relevant to the development of 4C skills. Through direct monitoring of technical obstacles (such as WiFi coverage) and teacher complaints, schools can make continuous *improvements*. The results of this evaluation do not just stop at the report, but become a database for future budget and policy adjustments. This control process ensures that school technology investments really have an impact on improving the quality of digital literacy and student character in the 21st century.

This study concludes that integrated digitalization policy management is a determinant variable in improving the quality of modern education. Without systematic planning, organization, implementation, and evaluation, technological tools may be physically available, but real 21st century (4C) skills transformation like those found at SDN 1 Sukamanah will not be realized. Therefore, the results of this study prove empirically that the 'Implementation of Learning Digitalization Policy is able to improve 21st Century Skills' in the elementary school environment.

4. CONCLUSION

Based on the results of research and discussion of the digitalization policy at SDN 1 Sukamanah in an effort to improve 21st century skills, it can be concluded that several main points can be concluded as follows:

1. Planning: Digitalization planning has been formally integrated in the school's strategic documents (KOS, RKS, and RKAS). The school is demonstrating a long-term vision by planning the procurement of multimedia spaces and coding enrichment programs by 2026. Although the main priority is still focused on the aspect of piety, digitalization planning still gets a clear portion of the budget as a systematic effort to stimulate students' critical thinking skills in the future.
2. *Organizing*: The organizational structure of digitalization has been formed through the assignment of additional tasks in the SKBM and the formation of the Media Team. This organization is not only bureaucratic but also functional, where there is a division of roles between the person in charge of the asset and the technical implementer (IT proficient teachers). This creates a collaboration ecosystem where the dissemination of knowledge between teachers is the main pillar in overcoming the limitations of individual technical competence.
3. Implementation (*Actuating*): The implementation of digitalization is carried out through the use of Interactive Flat Panel (IFP) devices as well as digital platforms such as Quizizz and Canva to support active learning. Teachers show high enthusiasm (70-80%) even though infrastructure is still limited and requires high mobility of tools. This implementation has been proven to be able to hone creativity and facilitate *communication* between teachers and students through digital media.
4. Evaluation (*Controlling*): The supervision function runs effectively through regular monthly meetings and a coaching clinic mechanism led by the Principal. The evaluation was conducted observationally to identify technical barriers in the field, such as internet signal coverage and limited number of devices. The results of this evaluation are consistently used as a basis for *data-driven decision-making* for budget adjustments and school programs in the next period.

The results of this study provide theoretical and practical implications, where theoretically this research strengthens the relevance of George R. Terry's management theory combined with the concept of 21st century skills, emphasizing that digital transformation in schools will only achieve optimal results if the POAC (*Planning, Organizing, Actuating, Controlling*) cycle) is consistently driven to stimulate creativity, critical thinking, collaboration, and communication of students. Practically, these findings show for other elementary school education units that the successful implementation of the learning digitalization policy in improving students' 21st century skills is highly dependent on the optimization of the four management functions in an integrated manner. School principals and education managers cannot only focus on the procurement of technological devices, but must be able to synergize visionary planning, the organization of competent human resources through media teams, consistent implementation of teaching and learning activities, and continuous supervision through technical evaluation. The success of digital transformation to foster students' *critical thinking, creativity, collaboration, and communication* skills can only be achieved if all stages of George R. Terry's management are carried out systematically and continuously as a unit of school policy.

To optimize digitalization policies in improving 21st century skills, the researcher formulated several strategic recommendations for related parties:

1. For School Principals
   It is hoped that it will continue to be consistent in overseeing the realization of the multimedia space development plan according to the 2026 target. In addition, the Principal needs to strengthen the digital literacy policy not only for teachers, but also for parents of students in order to create synchronization of supervision of the use of digital devices at home. Strengthening partnerships with external parties (CSR or the industrial world) can be an alternative solution to accelerate the procurement of devices without having to rely entirely on BOS budgets.

2. For Teachers
   It is expected to continue to improve independent competence in mastering the *Learning Management System* (LMS) and other digital learning tools without having to wait for formal training. Teachers should be more innovative in integrating the 4C skills into the teaching modules, so that technology not only serves as a presentation tool, but actually becomes a medium for students to experiment, collaborate, and solve problems creatively.
3. For the Education Office
   The Education Office is expected to pay more attention to schools that are transforming independently such as SDN 1 Sukamanah, especially in terms of ICT infrastructure assistance and subsidized internet *bandwidth* increases. In addition, there is a need for more equitable periodic training for all teachers (not just representatives) on digital pedagogy so that 21st century skill quality standards can be achieved uniformly at the sub-district and district levels.
4. For the Next Researcher
   This research is limited to the scope of policy management in one elementary school. The researcher is further advised to expand the research locus on the effectiveness of the use of technology on students' cognitive and affective learning outcomes quantitatively. In addition, research on the instructional leadership strategy of school principals in facing the resistance of digital change is also interesting to be studied in more depth to complement the findings regarding school digitalization management.

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