

THE PRINCIPAL'S MANAGEMENT MODEL IN IMPLEMENTING A DEEP LEARNING–BASED CURRICULUM TO STRENGTHEN STUDENTS' CHARACTER AT SDN 004 TELUK BAYUR

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Abstract

This study was motivated by the importance of strengthening character education at the elementary school level as a foundation for developing students' personality, morality, and social responsibility amid the challenges of globalization, the influence of digital media, and the decline of moral values. The study aimed to analyze the principal's management model in implementing a deep learning–based curriculum to strengthen students' character, including aspects of planning, organizing, implementation, supervision and evaluation, as well as supporting and inhibiting factors. This research employed a qualitative approach with a case study method. Data were collected through in-depth interviews, observations, and documentation involving the school principal, teachers, and parents as research informants. Data analysis was conducted through data reduction, data display, and conclusion drawing using triangulation techniques. The results of the study indicate that the principal's management model is implemented through integrated management functions. In the planning stage, the principal builds a shared understanding of deep learning–based learning and aligns curriculum documents with character development goals. In the organizing stage, the principal optimizes school resources through the establishment of a curriculum team, the distribution of teachers' roles, and the involvement of parents as educational partners. The implementation of learning is carried out through project-based activities, reflection, and collaboration that encourage the development of values such as responsibility, empathy, discipline, cooperation, and independence among students. Supervision and evaluation are conducted continuously through classroom observations, review of teaching documents, student portfolios, and feedback from parents. The success of the implementation is supported by adaptive leadership of the principal, teacher commitment, and collaboration among school members, while the obstacles include variations in teachers' readiness, limited facilities and infrastructure, limited instructional time, and the geographical conditions of the school.

Keywords: *Principal Management Model, Curriculum, Deep Learning, Character Education, Elementary School.*

INTRODUCTION

Character education at the elementary school level is a crucial foundation for shaping students' personality, morality, and social responsibility. At this stage, schools are tasked not only with developing cognitive aspects but also with instilling values such as honesty, empathy, discipline, responsibility, and respect, which will influence students' long-term behavior (Berkowitz & Bier, 2022; Lickona, 2012). This urgency is further heightened amidst the challenges of globalization, digital media penetration, and rapid social change, which often bring values that are not fully aligned with local culture and expected moral principles (OECD, 2023; Nur'aeni & Hidayat, 2021). In this context, elementary education is required to provide learning that is not only oriented towards academic achievement but also capable of internalizing character concretely in students' daily lives (Prihatmojo & Badawi, 2020). Although character education has become a key agenda item in national education policy, its implementation in elementary schools still faces various obstacles. Learning practices in many schools still tend to be administrative, focused on completing material, and have not fully encouraged value transformation in student behavior (Angga et al., 2022;

Muchtar & Suryani, 2019). Furthermore, limited learning innovation, minimal technology integration, and a lack of contextual approaches often result in character education stalling at the conceptual level (Andiatma, 2019; Aulia et al., 2023). This situation demands new strategies that are more adaptive, meaningful, and tailored to the needs of the digital generation, particularly through learning that encourages reflection, collaboration, problem-solving, and connections to real life (Sumarsih et al., 2022; OECD, 2023). One relevant approach to addressing these needs is a deep learning-based curriculum. In the educational context, deep learning is not simply defined as a technical term for artificial intelligence, but rather as in-depth learning that emphasizes conceptual understanding, active student engagement, reflection, personalization, and the connection between material and real-world situations (Fullan et al., 2021; Ministry of Primary and Secondary Education, 2025). This approach has the potential to strengthen character education because it encourages students to go beyond simply receiving information, but also to construct meaning, reflect on values, and apply them in their daily lives (Chen & Yang, 2022; Sujarwanto, 2023). With these characteristics, deep learning can be a more effective pedagogical medium for integrating cognitive, affective, and social dimensions in learning (OECD, 2023).

The successful implementation of a deep learning-based curriculum is greatly influenced by the principal's managerial capacity. The principal holds a strategic position as an educational leader responsible for planning, organizing, implementing, supervising, and evaluating curriculum innovations in schools (Sinaga et al., 2024). In the elementary school context, the principal serves not only as an administrator but also as a visionary, a driver of change, a facilitator of teacher professional development, and a builder of collaboration with parents and the community (Saragih et al., 2024). Therefore, implementing a deep learning-based curriculum for character building requires an adaptive, systematic, and contextual principal management model. The urgency of this model is increasingly apparent in the context of SDN 004 Teluk Bayur, Berau Regency, East Kalimantan. This school faces geographical challenges, limited access to infrastructure, diverse student socio-economic backgrounds, and strong local cultural influences on student behavior. Although initial initiatives such as the use of digital media and project-based thematic learning have emerged, these practices remain fragmented and have not been integrated into a comprehensive school management framework. This situation demonstrates the need for a principal management model capable of guiding the implementation of a deep learning-based curriculum in a more consistent, measurable, and sustainable manner to strengthen student character.

Based on this background, the research question in this article is: what is the principal's management model in implementing a deep learning-based curriculum to strengthen students' character at SDN 004 Teluk Bayur? The main question is described in four main focuses, namely: (1) how does the principal plan to implement a deep learning-based curriculum to strengthen students' character; (2) how does the principal organize resources and the role of school residents in supporting the implementation of a deep learning-based curriculum; (3) how does the principal's management strategy implement the integration of deep learning into the student character learning process; and (4) how does the principal supervise and evaluate the effectiveness of the implementation of a deep learning-based curriculum, including supporting and inhibiting factors. This study aims to describe and analyze the principal's management model in implementing a deep learning-based curriculum to strengthen student character at SDN 004 Teluk Bayur. Specifically, this study aims to examine aspects of planning, organizing, implementing, supervising, and evaluating, as well as identifying supporting and inhibiting factors in the model's implementation. The results are expected to provide conceptual contributions to the development of innovation-based educational management, while also offering practical references for principals and policymakers in strengthening character education through deep learning in elementary schools.

Various previous studies have separately addressed character education, learning innovation, technology integration, and the leadership role of principals. However, there is limited research specifically examining how principals develop management models that integrate deep learning-based curricula as a character-building instrument in elementary schools. This gap is particularly acute in the context of schools with limited resources and geographic challenges, such as SDN 004 Teluk Bayur, where the implementation of educational innovation cannot be separated from the social and local realities of the school. The novelty of this research lies in its attempt to formulate a principal management model that positions deep learning not only as a learning strategy but also as an integral part of the school management system to strengthen student character. This article also offers a contextual perspective on how curriculum innovation is implemented in elementary schools in areas with limited infrastructure, yet still strives to develop reflective, personalized, and data-driven learning. Thus, this research not only contributes to the development of educational management theory but also presents good practices with the potential to be replicated in other schools with similar characteristics.

METHOD

This research uses a qualitative approach with a case study method to examine in-depth the principal's management model in implementing a deep learning-based curriculum to strengthen student character at SDN 004 Teluk Bayur. The qualitative approach was chosen because it can comprehensively explore the principal's experiences, strategies, and managerial practices in a real-world context, particularly in elementary schools with unique social and geographical characteristics. The research was conducted at SDN 004 Teluk Bayur, Berau Regency, East Kalimantan, during the period of November 2025 to April 2026. This location was chosen because it has unique contextual conditions, such as limited infrastructure, diverse student backgrounds, and the existence of initial initiatives in implementing technology-based learning and character building.

The research data consisted of primary and secondary data. Primary data were obtained through in-depth interviews with the principal as the primary informant, and teachers and parents as supporting informants. Secondary data consisted of school documents, such as the curriculum, learning materials (lessons learned, syllabus), organizational structure, academic calendar, and documentation of learning activities. Data sources also included classroom learning activities that reflected the implementation of deep learning and character building. The researcher acted as the primary instrument in data collection, supported by interview guidelines, observation sheets, and documentation. Data collection techniques were carried out in three ways, namely: (1) direct observation of the learning process and the principal's managerial practices; (2) semi-structured interviews to gather in-depth information regarding curriculum planning, organization, implementation, and evaluation; and (3) documentation studies to complement and strengthen the data from observations and interviews.

Data analysis was conducted using the interactive model of Miles, Huberman, and Saldana, which includes data collection, data reduction, data presentation, and drawing and verifying conclusions. The data obtained were coded and categorized based on research themes, such as planning, organization, implementation, supervision, and supporting and inhibiting factors for the implementation of a deep learning-based curriculum. Data presentation was descriptive, using narrative and thematic matrices to facilitate interpretation. Data validity was tested using triangulation techniques, specifically technical triangulation, by comparing the results of interviews, observations, and documentation. This step was taken to ensure the consistency, validity, and credibility of the research findings, ensuring that the results objectively describe the principal's managerial practices in implementing deep learning-based instruction to strengthen student character.

RESULTS AND DISCUSSION

The results of the study indicate that the principal's management model in implementing a deep learning-based curriculum for strengthening student character at SDN 004 Teluk Bayur takes place through four main management functions: planning, organizing, implementing, and supervising and evaluating, with mutually influencing supports and obstacles. In the planning aspect, the principal has built a shared understanding that deep learning is interpreted as contextual, meaningful, and close to students' real-life learning. Planning is carried out by identifying students' character needs through behavioral data, social interactions, and parental input, then aligning them into the curriculum and supporting administrative tools. This planning also places character strengthening as a core objective, not merely a complement to academic learning.

In terms of organization, the principal optimizes school resources by establishing a curriculum team, assigning teacher roles, structuring the homeroom teacher function, and involving educational staff, the school committee, and parents. Organization is carried out collaboratively by adjusting teacher competencies, infrastructure conditions, learning time allocation, and the needs of project-based learning, reflection, and collaboration. Information technology is also utilized to support internal communication, document management, and program monitoring. In terms of implementation, the principal's management strategy is directed at transforming learning from a transmissive pattern to student-centered learning. Implementation is carried out through project-based learning, reflection, discussion, group work, and linking material to students' real-life contexts. Teachers act as facilitators, while students are encouraged to be more active, reflective, critical, and collaborative. The implementation of this strategy is also supported by teacher learning communities, professional mentoring, and the use of digital media relevant to student needs.

In the supervision and evaluation aspect, the principal conducts continuous monitoring through classroom observations, review of teaching materials, reflective discussions, student project portfolios, and feedback from teachers, students, and parents. The success of implementation is not only assessed from academic achievement, but also from changes in student attitudes, responsibility, independence, and learning habits at school and at home. The

results of supervision and evaluation are used as a basis for developing follow-up actions, improving learning materials, and improving teacher competency. This study also found that supporting factors for implementation include adaptive and collaborative principal leadership, teacher competency and commitment, a positive school culture, adequate curriculum materials, parental support, and partnerships with external parties. Inhibiting factors include variations in teacher readiness, limited infrastructure, time management challenges, the complexity of character assessment, resistance to change, and the geographical conditions of Teluk Bayur which affect program access and sustainability.

DISCUSSION

Research findings confirm that the implementation of a deep learning-based curriculum at SDN 004 Teluk Bayur is not merely a technical learning issue, but rather a managerial process that requires strategic leadership, organizational capacity, and sensitivity to local context (Fullan, 2023; Bush, 2022). During the planning stage, the principal positions the curriculum not as an administrative document but as an instrument for improving the quality of learning. This is evident in efforts to build a shared sense of understanding that deep learning must be connected to students' real-life experiences and directed toward strengthening character (Fullan et al., 2021; Hallinger & Wang, 2021). Conceptually, these findings demonstrate the principal's role as a direction-setter, building a shared vision, orientation, and meaning for learning change (Leithwood et al., 2021).

The primary strength of the planning stage lies in the alignment of perceptions between the principal, vice principal for curriculum, teachers, and parents. This shared understanding is crucial because curriculum change is fundamentally an organizational change process (Fullan, 2023; Datnow & Park, 2022). Learning innovations tend to fail not solely due to weak program design, but also because implementers in the field lack a shared belief in the urgency and direction of change. In this context, the planning at SDN 004 Teluk Bayur demonstrates evidence-informed planning because it is based on the identification of student needs, real-life character issues, and input from the family environment (OECD, 2023; Epstein & Sheldon, 2022).

In terms of organization, research findings show that principals view school resources holistically. Resources are not limited to teachers and physical facilities, but also include time, school culture, parents, and the environment as part of the learning ecosystem. This finding demonstrates the application of strategic resource management principles, namely the ability to align various resources to move toward the same learning goals (Bush, 2022; Hallinger & Walker, 2023). The formation of curriculum teams, the arrangement of activity coordinators, the assignment of teacher roles, and the strengthening of homeroom teacher functions demonstrate that organization is carried out consciously as a coordination mechanism, not merely a division of administrative labor. This organization also demonstrates the school's character as a learning organization (Kools & Stoll, 2022). Teachers, principals, educational staff, students, and parents are positioned in interconnected relationships to support curriculum implementation. In this context, parents function not only as recipients of information but also as strategic partners in character formation (Epstein, 2022). However, research also shows that school–family relationships still need strengthening to move from a socialization pattern to a more substantive and dialogic partnership (Epstein & Sheldon, 2022).

During the implementation phase, research findings indicate a paradigm shift in learning from a teacher-centered model to one that positions students as active subjects. This strategy is evident in the use of projects, reflection, discussion, collaboration, and contextual problem-solving. This shift confirms that the implementation of deep learning in schools is not simply a change in method, but part of a broader pedagogical transformation (Chen & Yang, 2022; Ministry of Primary and Secondary Education, 2025). Teachers are required to act as facilitators, while students are encouraged to actively construct knowledge, reflect on experiences, and connect learning to their realities. From an educational management perspective, this implementation emphasizes the importance of instructional leadership (Hallinger et al., 2025). Principals do not stop at administrative functions but actively develop a pedagogical vision, facilitate teacher professional development, and ensure that classroom learning moves in accordance with the desired direction of change. The presence of teacher learning communities, professional discussions, and shared reflections demonstrate that changes in learning practices are supported by a culture of professional learning (Liu et al., 2022; DuFour & Reeves, 2023).

Research findings also show that the integration of deep learning contributes to strengthening student character. Project activities, reflection, group work, and formative assessments foster the development of responsibility, cooperation, empathy, independence, and perseverance (Berkowitz & Bier, 2022; Yan et al., 2022). This suggests that character is not taught as a standalone subject, but is shaped through consciously designed learning experiences. In this context, deep learning becomes a pedagogical medium that allows for a more comprehensive

integration of cognitive, affective, and social dimensions (OECD, 2023). Supervision and evaluation in this study emerged as the focal point of implementation. Principals defined success not solely in terms of academic outcomes, but also in the quality of the learning process and changes in student behavior observed at school and at home (Fullan, 2023; Hattie, 2023). This perspective demonstrates a shift from narrow, value-based accountability to broader pedagogical accountability. Supervision is not practiced as administrative control, but rather as a professional development process through observation, review of teaching materials, feedback, reflection, and follow-up (Glickman et al., 2023; Zepeda, 2022).

The use of various evaluation instruments, such as classroom observations, reflection rubrics, project portfolios, digital documentation, and parent feedback, points toward data-driven decision-making practices (Datnow & Park, 2022; Schildkamp, 2023). Data from supervision and evaluation are used to improve planning, adjust learning strategies, and develop teacher capacity. However, research also finds challenges in disseminating evaluation results to parents. Some parents do not fully understand the philosophy of deep learning assessment, particularly regarding the indicators assessed in projects and reflections. This situation highlights the need to strengthen public evaluation literacy so that schools and families have a shared perception of learning success (OECD, 2023).

The supporting and inhibiting factors identified indicate that implementing a deep learning-based curriculum is a multidimensional process. Adaptive principal leadership, teacher commitment, a collaborative culture, parental support, and policy support are key strengths (Hallinger & Liu, 2023; Harris & Jones, 2022). Conversely, variations in teacher readiness, limited facilities, challenges in character assessment, resistance to change, and geographic location are significant barriers (Fullan, 2023; UNESCO, 2023). From a change management perspective, these barriers are a natural consequence of the organizational transformation process. Therefore, school strategies that emphasize mentoring, ongoing training, coaching, and strengthening learning communities are appropriate responses to maintain the sustainability of change (Hargreaves & Fullan, 2023).

The unique context of SDN 004 Teluk Bayur in Berau Regency lends special significance to the findings of this study. The school is situated in a social environment that demands contextual learning, close relationships between the school and families, and adaptation to geographical challenges. Therefore, the implementation of deep learning at this school cannot be separated from a local context-based approach or place-based education (Sobel, 2023; Yemini et al., 2023). Students' daily lives, community conditions, and home experiences serve as learning resources and a platform for demonstrating the success of character education. Thus, these findings confirm that an effective principal management model is not one that is technically uniform, but rather one that is able to integrate pedagogical vision, resource organization, a reflective culture, and the local context as a whole.

Overall, this study demonstrates that the successful implementation of a deep learning-based curriculum is highly dependent on the principal's ability to integrate educational management functions. Needs-based planning, collaborative organization, student-centered implementation, and reflective supervision and evaluation enhance the sustainability of learning innovations (Bush, 2022; Fullan, 2023). Therefore, the principal's management model at SDN 004 Teluk Bayur can be understood as a contextual, adaptive, and strategic educational leadership practice that fosters meaningful learning while strengthening student character.

CONCLUSION

The implementation of a deep learning-based curriculum to strengthen student character at SDN 004 Teluk Bayur shows that the success of learning innovation is largely determined by the quality of the principal's management. This study confirms that the principal plays a strategic role in systematically integrating the functions of planning, organizing, implementing, and supervising and evaluating so that learning is not only oriented towards academic achievement but also on building student character through meaningful, reflective, and contextual learning experiences. In this context, deep learning is not understood simply as a learning approach, but rather as a framework for transforming the learning culture in schools.

During the planning stage, the principal successfully established a shared understanding of deep learning as a learning process that emphasizes active student engagement, real-life relevance, and the integration of character values into the learning process. During the organizational stage, school resources were managed collaboratively through a clear division of roles between the principal, teachers, education staff, students, parents, and the school committee. During the implementation stage, project-based learning, reflection, discussion, and collaboration encouraged a paradigm shift from transmissive learning to student-centered learning. Furthermore, ongoing supervision and evaluation were conducted through observation, review of teaching materials, reflection, portfolios, and feedback from parents, providing the basis for continuous program improvement.

This study also shows that the main supporting factors for implementing a deep learning-based curriculum include the principal's visionary and adaptive leadership, teacher competence and commitment, a positive school culture, parental support, and the availability of infrastructure. Conversely, the main inhibiting factors are variations in teacher preparedness, limited learning resources and time, challenges in objective character assessment, and the geographical conditions of Teluk Bayur. Nevertheless, through a collaborative and contextual managerial approach, the school was able to maintain the continuity of effective curriculum implementation.

Based on these findings, principals need to continue strengthening their instructional leadership capacity through more structured supervision, documentation of learning practices, and ongoing teacher professional development. Teachers need to improve their pedagogical competencies in designing in-depth learning that is creative, reflective, and character-oriented. Parents and school committees need to expand their roles as active partners to ensure continuity of character education between home and school. Meanwhile, local governments need to provide policy support, training, mentoring, and infrastructure enhancements tailored to local needs.

More broadly, the results of this study recommend the development of a deep learning-based school management model as a good practice that can be replicated in other schools with similar conditions. Strengthening deep learning-based character education policies, developing an authentic character assessment system, and building a collaborative ecosystem between schools, families, and communities are important agendas to support the sustainability of this innovation. Furthermore, further research is needed to examine the impact of implementing a deep learning-based curriculum on long-term learning outcomes and student character development, using both quantitative and mixed-method approaches. Thus, deep learning can be positioned not only as a pedagogical innovation, but as a relevant educational management strategy for developing critical, reflective, and character-driven students.

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