Managing Deep Learning to Encourage Independence in Elementary School Students: A Qualitative Case Study

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ARTICLE INFO	ABSTRACT
	Instilling learning independence from an early age is an important step towards creating students who are independent, confident, and capable of lifelong learning. This independence plays an important role in supporting academic success as well as shaping students' character and skills in facing future challenges. This research aims to analyze deep learning management in shaping the learning independence of elementary school students. The approach used is descriptive qualitative with a case study at SD Muhammadiyah Danunegaran. Data were collected through interviews, observations, and documentation. Informants were selected by purposive sampling consisting of class teachers and students. Data analysis used thematic techniques assisted by ATLAS.ti. The results showed seven main themes in deep learning management, including planning, implementation, evaluation, characteristics and importance of learning independence, supporting factors, and challenges. Planning is done collaboratively, implementation places teachers as facilitators, and evaluation uses rubrics, checklists, and observations. Independence is characterized by confidence, initiative, responsibility, and self-learning. School culture is supportive, while challenges come from students' diverse characters and parenting patterns. The findings contribute to the management of deep learning practices in elementary schools, emphasizing how well-managed learning processes can foster students' independence, as well as their critical and reflective thinking in constructing knowledge. *This is an open access article under the CC BY-NC-SA license.*

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1. INTRODUCTION

Learning independence is an important ability that should be developed from the primary school level as it is the basis for students to grow as active and reflective learners. Independent students are

better able to manage time, determine learning goals, and complete tasks without relying too much on the teacher. Research by Fitriani et al. (2025) shows that learning independence is an important element in shaping the character of elementary school students. Independent students tend to show initiative, confidence and active involvement in learning. Teacher and parent support is very influential in fostering an independent learning attitude that contributes to learning success. Research by Handayani et al. (2024) also emphasized that early independence character building is important to improve students' self-regulation, emotion management, and social interaction skills.

To foster learning independence, systematically designed learning management is needed, by placing students as active subjects in the learning process. Problem-based learning and project-based learning models are considered effective in encouraging students to manage their learning process independently, through explorative activities, problem solving, and responsible decision making (Ndiung and Menggo 2024; Putri Lestari et al. 2024; Suradika et al. 2023). In this approach, the teacher no longer acts as the main source of information, but as a facilitator who assists the learning process, provides appropriate direction, and encourages students to think critically and independently. (Sadykhan et al. 2022). A learning environment that is open, encourages reflection, and makes room for initiative and mistakes as part of the learning process, is an important element in shaping student independence.

But in fact, the learning process in elementary schools still does not fully encourage students to become independent learners. Learning in the classroom tends to be teacher-centered, with activities that emphasize the delivery of material and completion of tasks in a patterned manner (Sumardi, Rohman, and Wahyudiati 2020). Students are often directed directly without being given enough space to develop initiative, decision-making, and reflection on their own learning process. As a result, many students are accustomed to depending on teacher instructions and are less encouraged to learn actively and responsibly. This condition shows that learning practices in primary schools still need to be directed towards a more participatory and in-depth approach to foster real learning independence.

To overcome the problem of low student learning independence, learning management is needed that is not only administrative, but also able to support the implementation of deep learning (Nadia *et al.*, 2025). Such management is needed to create meaningful learning experiences and improve students' ability to manage their learning process independently. This approach integrates cognitive, emotional and metacognitive elements in every stage of learning (Pertiwi *et al.*,2022; Widiastutik & Meyjen 2024). Deep learning is not just an instructional model, but a learning management philosophy that places students as the main actors in understanding and interpreting knowledge as a whole.

Deep learning includes three main elements, namely joyful, mindful, and meaningful learning (Diputera *et al.*, 2024; Feriyanto and Anjariyah 2024; Fitriani and Santiani 2025). Joyful learning creates a fun atmosphere so that students are more motivated, mindful learning encourages full awareness of the learning process, while meaningful learning relates the material to the real context so that it is more deeply understood (Cahyani 2025; Nurul *et al.* 2025). These three aspects complement each other in building a complete learning experience and become an important basis in fostering student learning independence since elementary school (Wijaya *et al.*, 2025; Nabila *et al.*, 2025).

Various studies have highlighted the importance of active and deep learning, but studies that specifically discuss how deep learning is systematically managed to foster independent learning in elementary school students are still limited. In addition, the relationship between deep learning management and the formation of independent learning in the context of value-based elementary schools, such as SD Muhammadiyah, has not been widely studied. Based on this, this study aims to analyze how deep learning management is applied to encourage learning independence in elementary school students. The research question asked is: How is deep learning managed to encourage learning independence in elementary school students?

Although active learning and deep learning have been widely researched, studies that explicitly highlight deep learning management to build learning independence of elementary school students are still very limited. This article offers a new contribution in the form of a learning managerial framework

that integrates aspects of joyful, mindful, and meaningful learning, while placing teachers as strategic learning managers to form a culture of independent learning in elementary classrooms.

This study aims to analyze deep learning management applied in elementary schools in encouraging student learning independence through a qualitative case study approach. The results of this study are expected to contribute to strengthening learning management practices in elementary schools, particularly in managing learning processes oriented towards deep learning, namely learning that fosters critical, reflective, and independent thinking skills in students.

SD Muhammadiyah Danunegaran was chosen as the research location because it shows learning practices that reflect the principles of deep learning. Although the concept of deep learning is relatively new to be formally introduced in the Indonesian education system, its main characteristics such as active student involvement, meaningful learning and reflection have long been implemented in this school through the PAIKEM (Active, Innovative, Creative, Effective and Fun Learning) approach recognized in the 2004 and 2013 Curricula. Thus, SD Muhammadiyah Danunegaran is considered relevant to be studied in the context of deep learning management as a strategy to build students' learning independence.

2. METHODS

This study is a qualitative study using a descriptive approach. Qualitative research methods are used to examine objects in their natural conditions, with the researcher as the main instrument (Sugiyono 2020). The research was conducted at Muhammadiyah Danunegaran Elementary School, Yogyakarta City, in the even semester of the 2024/2025 academic year. The purpose of this study was to analyze the in-depth learning management applied in shaping the learning independence of elementary school students. A case study design was chosen because it allowed researchers to gain a comprehensive and contextual understanding of learning practices in a real environment.

The research subjects consisted of three classroom teachers and three students from grades IV, V, and VI who were selected purposively, considering that upper grade students tend to have more developed learning independence. The data sources in this study consisted of primary and secondary data. Primary data were obtained through observation and interviews, while secondary data were obtained from lesson plans, teacher notes, and documentation of learning activities (Hardani et al. 2020).

Data collection was conducted over two months, from June to July 2025, through three stages: (1) pre-fieldwork (permitting, initial observation, and subject selection); (2) fieldwork (participatory observation and in-depth interviews); and (3) post-fieldwork (data verification and triangulation).

Data analysis was conducted using thematic analysis techniques to analyze data with the aim of identifying patterns or finding themes through data collected by researchers (Heriyanto 2019), which is carried out based on six steps according to based on six steps according to Naeem et al. (2023), namely: (1) transcription, data recognition, and selection of quotations, carried out by transcribing interviews, rereading data, and selecting relevant quotations; (2) selection of keywords to identify important terms that appear consistently in the data; (3) coding by labeling meaningful sections based on keywords; (4) developing themes by grouping codes into sub-themes and main themes; (5) conceptualization through interpreting the relationships between keywords, codes, and themes; and (6) developing a conceptual model as a representation of the research findings.

To provide a clear picture of the data analysis process, we explain all stages of our analysis in a structured manner. Data analysis was conducted with the help of ATLAS.ti as follows:

2.1. Coding Process

The initial step of the analysis was conducted by coding the entire interview transcript line by line. Through a thorough reading, the researcher identified codes for each statement relevant to the research questions with the help of ATLAS.ti 9. An example of the coding results is presented in Figure 1 below.
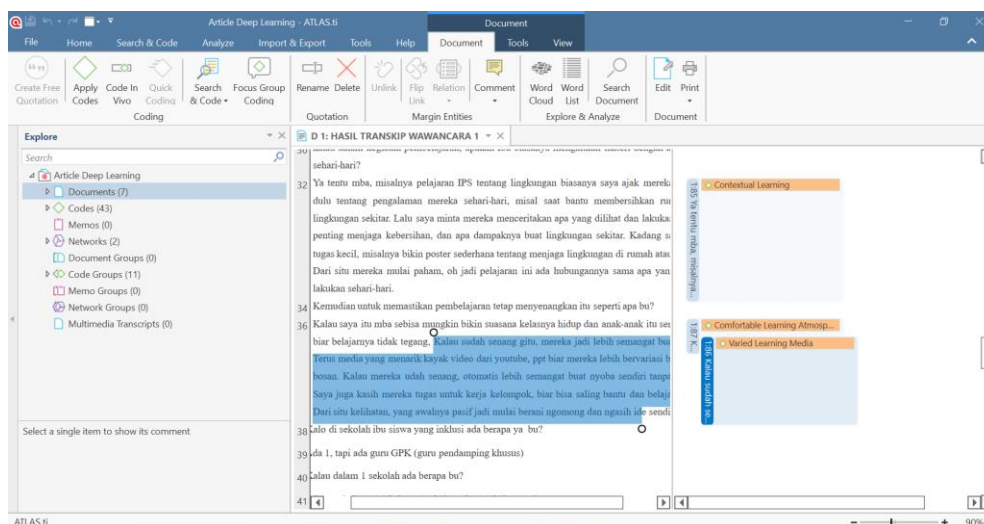
Figure 1. Coding Process

2.2. Theme Development

The next step is to develop themes by grouping codes with similar meanings into several sub-themes and main themes. The results of this theme grouping are presented in Figure 2.
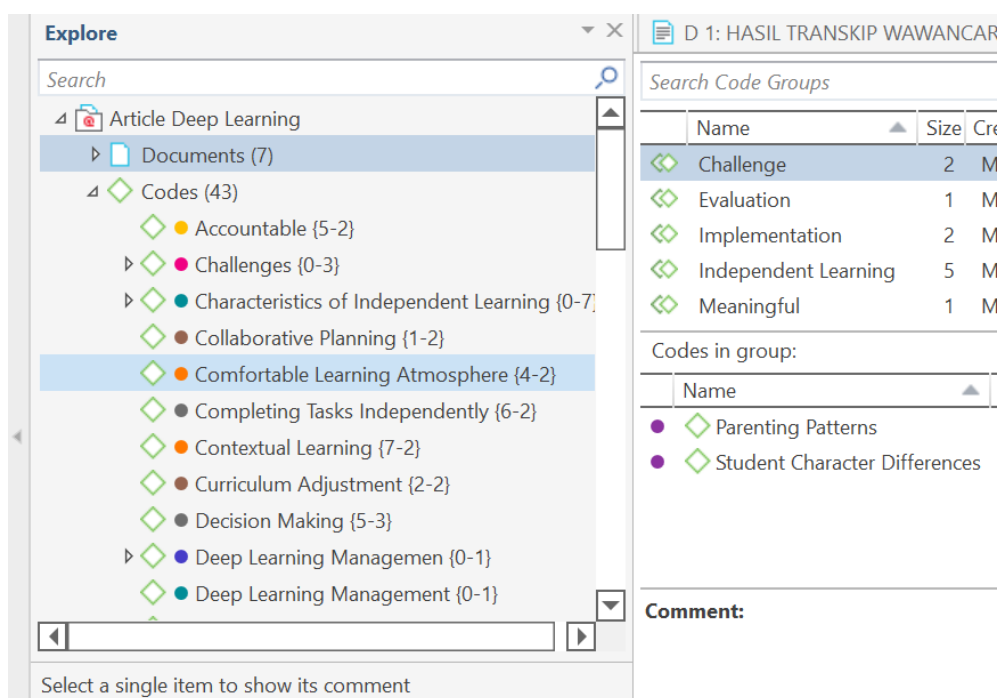

Figure 2. Theme Development

2.3. Conceptuaization Interpretation of Codes and Themes

Conceptualization was carried out by examining the relationship between keywords, codes, and themes to formulate the main concepts that describe the research findings. These concepts then became the basis for the development of a conceptual model.

2.4. Development of Conceptual Model

The final step is the development of a conceptual model, which involves compiling representations of the relationships between themes and concepts based on relevant findings and theories. The results of the conceptual model development are presented in Figure 4.
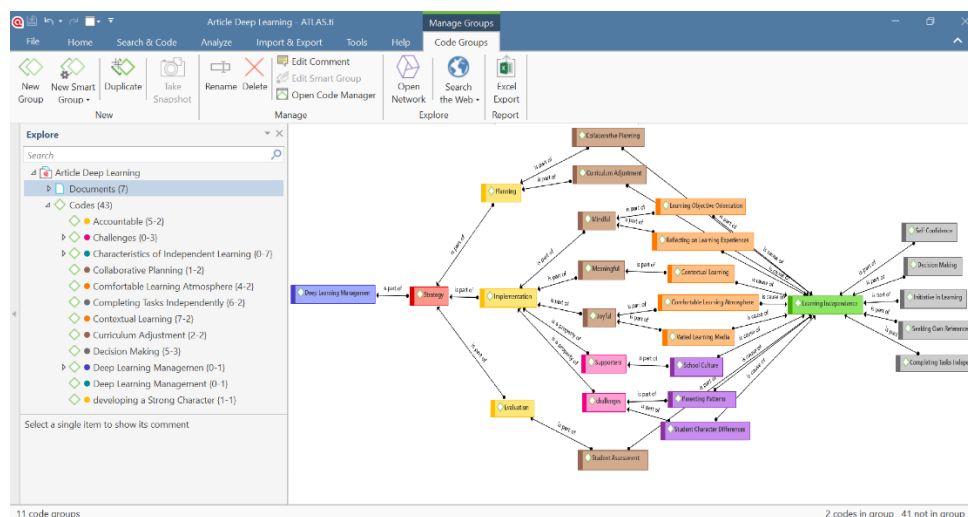
Figure 3. Conceptual Model

3. FINDINGS AND DISCUSSION

3.1. Finding

Based on the results of data analysis, the flow of in-depth learning management in encouraging student learning independence is visualized in Figure 4.
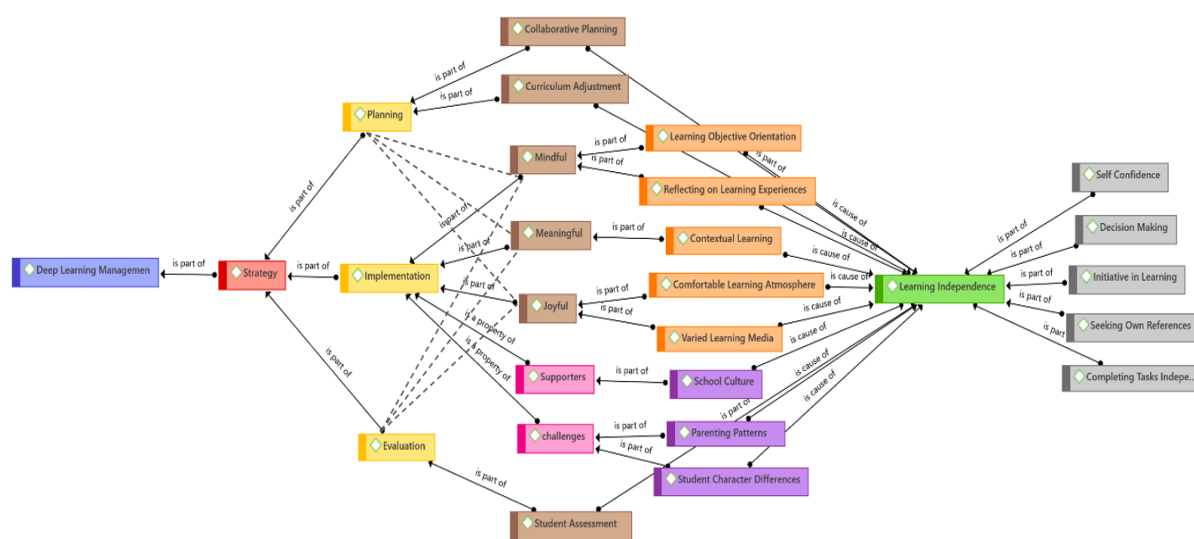

Figure 4. Deep Learning Management Flow

1. Deep Learning Management Strategy

a. Planning

In-depth learning planning to foster independent learning is identified in two main aspects, namely collaborative planning and curriculum adjustment. At this stage, teachers in one phase/level jointly develop and review learning outcomes (CP) and learning objectives (TP), so that their suitability for the characteristics of students at each level can be analyzed collectively. Curriculum adaptation is then carried out by rearranging the sequence of material, methods, and learning tasks to make them more contextual and to provide space for students to take initiative and responsibility for their learning process.

"If CP and TP are for the TEAM because they are in phases, phase A is for 1st and 2nd grade teachers... Phase B is the same for 3rd and 4th grade teachers, phase C is for 5th and 6th grade

teachers… first analyze in groups according to their levels and phase of group work." (N1/20/June/2025)

During the curriculum adjustment phase, teachers adapt learning steps using methods specifically chosen to foster student independence and responsibility for learning. This is evident in the following statement:

"… usually, in order for children to become independent, problem-based learning methods are used… so there is the PBL (Problem-Based Learning) method and then there is PJBL… this also fosters independence in students… students can create or produce a piece of work… students will become more independent." (N1/20/June/2025)

This statement is in line with other teachers who emphasize that:

"We try to make learning as interesting as possible… Perhaps with the available tools, with videos, pictures or other things, or with interesting quizzes, so that children are willing to try themselves… From there, they continue to be motivated to seek things out for themselves." (N2/8/July/2025)

In-depth learning planning at SD Muhammadiyah Danunegaran is based on collaborative work between teachers per phase and curriculum adjustments that are deliberately aimed at student independence in learning. CP and TP are discussed together, then translated into material choices, activity sequences, and methods such as PBL and PJBL, so that from the outset, learning is designed to provide space for student initiative and responsibility in learning.

b. Implementation

The implementation of deep learning covers three sub-themes, namely mindful learning, meaningful learning, and joyful learning. In terms of mindfulness, teachers help students realize the purpose and benefits of learning and encourage them to reflect on their learning experiences. Understanding of learning objectives is evident when teachers explain from the outset what will be learned and why the material is important for everyday life.

"At the beginning of the lesson, I explain to the children what material they will be learning and why they are learning it, so that they truly understand its benefits…" (N1/20/June/2025)

This statement is reinforced by another teacher who emphasizes that learning is not only for grades, but for understanding meaning.

"…we learn this not only for grades, but so that you can understand when you encounter things like this in your daily lives." (N3/8/July/2025)

In addition, teachers also encourage reflection on learning experiences by asking students to recount what they have learned at the end of the lesson.

"I also let them know why learning is important and what it is for, and usually after class, I ask the children to recount what they have learned today to see how well they understand." (N1/20/June/2025)

In terms of meaningfulness, learning is designed contextually by relating the material to everyday situations.

"…there is already a correlation between the learning delivered and everyday problems… for example, how many tiles are there in this room… we try to make everything relevant to everyday life." (N2/8/July/2025)

This statement was reinforced by another teacher who emphasized the importance of connecting lessons to students' concrete experiences after the pandemic.

"…they just went through COVID, right? So it really has to be related to their daily lives… for example… I ask them to share their experiences at home during the pandemic… or… for example, calculating their own pocket money so they can understand better." (N3/8/July/2025)

This is in line with students' statements that learning is more interesting when it is closely related to their experiences.

"The exciting ones are usually those that involve storytelling and logic." (N5/8/July/2025)

In terms of joyfulness, teachers strive to create a relaxed and enjoyable classroom atmosphere so that students are not tense and are more willing to try things for themselves.

"I try as much as possible to make the classroom atmosphere lively and keep the children happy so that they don't feel tense when learning. When they are happy, they become more enthusiastic about learning." (N1/June 20, 2025)

This statement is in line with other teachers who try to make learning feel easy for students.

"So, as much as possible, make it fun... If you take it easy, they will be happier and more willing to try things themselves." (N2/8/July/2025)

This is reinforced by students' statements describing the learning atmosphere as enjoyable.

"Some things are exciting, some are boring, but even the boring stuff isn't too boring." (N5/8/July/2025)

Teachers foster independent learning by first helping students understand the purpose and benefits of learning (mindful), connecting the material to their real-life experiences and situations (meaningful), and then creating a relaxed and enjoyable classroom atmosphere (joyful). Through this approach, students not only understand "what" and "why" they are learning, but are also encouraged to be brave enough to try, ask questions, and complete tasks on their own.

c. Evaluation

On the theme of in-depth learning evaluation, teachers assess students to see their independence in learning, especially through observation during group assignments and project assignments.

"Attitude scores... can be checked through observation, when children are working on group assignments... their independence can be seen." (N1/20/June/2025)

Another teacher emphasized that independence is evident in students' active attitudes and initiative.

"...we see it in their attitude... being active in class, completing tasks, taking the initiative to learn on their own..." (N2/8/July/2025)

In addition, teachers also use assessment rubrics to assess student behavior in project assignments.

"Usually with... rubrics... project assignments... we can see directly whether this child works independently or just watches their friends..." (N3/8/July/2025)

Students' independence in learning is assessed through student assessments based on attitude observations and project assignment rubrics. Teachers observe the extent to which students are active, take initiative, and complete tasks independently in group work and projects, so that it is not only the final result that is assessed, but also the learning process.

2. Support and Implementation Challenges
a. Support

On the theme of support, school culture is the foundation for fostering independence through vision and mission, deep learning curriculum, and character building. Teachers explain that the school's direction is conveyed through the leadership of the principal and internalized in each class.

"Every school has its own vision and mission, ma'am... communicated by the principal... every class must be in line with the curriculum, for example, deep learning students must be... independent... and also have the 7 habits of great children." (N3/8/July/2025)

The cultivation of independence is not always stated directly, but is built through discipline and responsibility in everyday school life.

"If it is not directly expressed to each individual... there are no direct words like that. But with the character that is cultivated every day with them, discipline, responsibility... from their character attitudes, daily habits here." (N2/8/July/2025).

Support for learning independence at SD Muhammadiyah Danunegaran is based on a school culture built through vision and mission, a deep learning curriculum, and character habits. The value

of independence is not often expressed verbally, but is instilled through routines of discipline and responsibility that are continuously practiced in everyday school life.

b. Challenges

On the theme of challenges, differences in student character and parenting styles at home become obstacles in the implementation of deep learning and efforts to foster independent learning. Teachers said that in one class, not all students are capable of being independent and some need intensive assistance, including inclusive students.

"...not all of my students are independent... the inclusive students are not yet independent at all... some need to be approached first before they can do their work..." (N1/20/June/2025)

Another teacher emphasized that there are still students who are passive due to differences in character.

"But there are still some who are calm and passive. Not all of them are active. Because each child has a different character, it's difficult." (N2/8/July/2025)

In addition to character, parenting styles and habits at home also influence students' independence in learning.

"Sometimes you can't always push the child... look again at their background and characteristics. Oh, this child is like this." (N2/8/July/2025)

"...at home they just play... they come home after sunset, they don't study... their habits at home are not to study, so they are not independent." (N3/8/July/2025)

The teacher's statement is in line with the students' comments describing the lack of learning support at home.

"No. It's just that if I want to study, I study. So it's up to me." (N6/8/July/2025)

"Rarely." (N4/8/July/2025)

The challenge of independent learning at SD Muhammadiyah Danunegaran stems mainly from differences in student character and parenting styles at home that do not support independent learning routines. There are still students who are passive and require intensive assistance (including inclusive students), while at home they tend to study infrequently and receive minimal guidance from their parents.

3. Student Learning Independence

Independent learning consists of six main aspects, namely confidence, responsibility, initiative to learn, doing tasks independently, making decisions, and searching for references independently. The aspects of confidence and responsibility are demonstrated when students complete tasks without always waiting for guidance from the teacher. The teacher explained that:

"Their characteristics are that they are usually confident, when doing tasks they always try to complete the task. And maybe also responsible." (N2/8/July/2025)

Another teacher added:

"Independent students are usually confident when asked questions during the learning process." (N3/8/July/2025)

Independent students also show initiative in learning, such as the willingness to read or study on their own without being told to.

"The child has a sense of independence in that he wants to read, he wants to learn, he wants to be able to follow the lessons." (N3/8/July/2025)

The ability to work independently is another important characteristic. Teachers said:

"Independence means that students can do their work without help from others." (N1/20/June/2025)

"They will understand and comprehend things themselves, without relying on the teacher." (N2/8/July/2025)

Students also stated:

"An example of independent learning is learning to do things on your own." (N6/8/July/2025)

The next aspect is the ability to make decisions. Teachers explained that in group assignments, students can determine their own roles and division of tasks without direct guidance:

"But teachers don't have to do that. Teachers just have to say, 'You have group work to do,' and then the students decide for themselves what they have to do." (N1/20/June/2025)

Another teacher added:

"Sometimes they decide for themselves how to divide up the tasks." (N3/8/July/2025)

The last characteristic is the ability to find references independently. Students actively seek additional learning materials beyond the teacher's explanations.

"Independence means that they can find materials themselves when given lessons. Usually, they search through existing reference books." (N2/8/July/2025)

Independent learning at SD Muhammadiyah Danunegaran is evident not only in the students' ability to complete tasks on their own, but also in the way they begin to position themselves as students: daring to make decisions, taking responsibility for their tasks, and actively seeking learning resources without always waiting for the teacher's instructions.

3.2. Disscussion
1. Integrated Approach Based on Independent Learning

The integrative approach based on independent learning at SD Muhammadiyah Danunegaran Yogyakarta can be seen in the way the school organizes in-depth learning, from planning and implementation to evaluation, so that each stage supports and reinforces the others. At the planning stage, teachers in one phase or level work together to review the CP and TP, then adapt them into the curriculum through the preparation of materials, activity flows, and the selection of methods such as PBL and PJBL, which are designed from the outset to open up space for student initiative and responsibility for learning (Quinay and Briones 2025; Sofiah, Nanda, and Azizah 2024). The design is then realized in the implementation stage through three orientations of deep learning, namely mindful, meaningful, and joyful learning. In practice, teachers help students understand the purpose and benefits of learning, connect the material to their real-life experiences and situations, and build a warm and pleasant classroom atmosphere (Jeet and Pant 2023; Schwind et al. 2022; States, Stone, and Cole 2023). This encourages students to be more courageous in trying, asking questions, and completing tasks on their own. The evaluation stage complements this approach through assessments that observe students' attitudes and use project rubrics to see the extent to which they are active, take initiative, and are truly independent in both group work and individual tasks. (Fraile et al. 2013). In this way, it is not only the final result that is assessed, but also the learning process. A consistent series of planning, implementation, and evaluation will give rise to initiative, responsibility, and the ability to manage learning. It is this process that shows that schools are not just carrying out learning routines, but building an integrative approach centered on independent learning.

If we look at the approach applied to independent learning at SD Muhammadiyah Danunegaran, it is not something that emerges at the end of the process, but is considered from the early stages and forms the basis for every decision in learning. Teachers design objectives and methods by considering the extent to which students can be given space to manage their own learning, conduct learning by helping students understand the meaning and relevance of the material, and then assess them through indicators of attitude and initiative, not merely cognitive aspects. This approach shows that in-depth learning management does not only focus on completing the material, but also encourages students to be able to manage their own learning process. In the context of basic education, this structured approach is important because it helps foster responsible habits, an understanding of why they are learning, and the courage to make decisions during learning. All of this becomes a foundation that strengthens learning independence at the next level (Lee et al. 2023; Manuela and Henrietta 2025).

2. Support and Implementation Challenges

In fostering independent learning among elementary school students, there are two main challenges, namely the diversity of students' individual characters and the parenting styles applied in their families. (Baten *et al*. 2020; Warsihna *et al*. 2023). Therefore, not all students, especially those with special needs, have the same readiness and ability to learn independently, requiring more intensive attention and guidance from teachers (Heryahya *et al*. 2022; Lee *et al*. 2023; Sunarni and Karyono H. 2023). This challenge is compounded by conditions at home, where some students are not accustomed to a study routine or do not receive adequate support and supervision, while the family environment actually plays a major role in building independent learning, and success at school is highly dependent on consistent parenting at home (Aliyyah *et al*. 2023; Mahoney *et al*. 2021). On the other hand, a school culture that consistently shapes habits of discipline, responsibility, and independent task completion is a key factor that supports student learning independence. Through continuous habituation, schools can create an environment that reinforces the values of independence and encourages initiative and a sense of responsibility in students (Aningsih et al. 2022; Sri 2022; Nashihin 2019; Rony 2021; Fiorella 2020; Lavy 2020).

3. Student Learning Independence

The independence of elementary school students at SD Muhammadiyah Danunegaran is characterized by six main characteristics, namely confidence, responsibility, initiative in learning, the ability to complete tasks independently, the ability to make decisions, and actively seeking references independently. Concretely, independent students can be seen from their ability to complete tasks without assistance, their courage to speak up in class discussions, and their interest in reading and learning that arises without the need for encouragement from others. (Cahya, Effendi, and Roesdiana 2021; Sugianto, Suryandari, and Age 2020). In learning activities, they are also able to divide tasks in group work, determine steps to complete tasks, and actively seek additional information beyond the material provided by the teacher (Peng et al. 2022; Strauss, S., & Rummel 2021; Zambrano et al. 2019)**.** These findings reinforce that independent learning encompasses a combination of affective aspects (confidence and sense of responsibility), cognitive aspects (ability to plan and make decisions), and behavioral aspects (initiative in completing tasks and seeking learning resources), and is greatly influenced by learning methods that provide space for students to think and act independently.

Since elementary school age, instilling independent learning has become very important because it is related to the formation of a sense of responsibility, self-confidence, decision-making skills, and readiness to face challenges in learning and life. At SD Muhammadiyah Danunegaran Yogyakarta, it has been found that independent students are generally able to complete tasks on their own initiative without always relying on teachers and actively seek additional references during the learning process. Teachers also emphasize that basic education is the main foundation for the formation of independent character, because habits instilled from an early age will influence the resilience and fighting spirit of students in the future (Siswanto et al. 2019; Tanu 2019). Thus, early learning independence is not merely a strategy in the learning process, but a strategic step to shape a generation that is resilient, confident, and able to adapt in various situations.

4. CONCLUSION

This study shows that deep learning management, realized through teacher collaboration at every stage, the implementation of joyful, mindful, and meaningful learning, and evaluation that emphasizes process and attitude, plays an important role in shaping the learning independence of elementary school students in a consistent and supportive school culture. However, the diversity of students' needs and characteristics, as well as family parenting patterns that do not support learning routines, remain challenges that require adaptive learning approaches and reflective and sustainable management.

This study contributes to the development of educational management by formulating a deep learning management model that integrates planning, implementation, evaluation, school culture, and

student learning independence into a comprehensive managerial framework. This model can be used as a reference for school principals and administrators of basic education units in designing programs to improve learning quality. In terms of teacher professional development, the research findings emphasize the importance of collaboration among teachers, joint planning by phase, the use of deep learning strategies, and data-based reflection practices as the core of continuous teacher competency development in elementary schools.

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