

## DIFFERENTIATION LEARNING DESIGN IN PRIMARY SCHOOLS: SYSTEMATIC LITERATURE REVIEW

<sup>1</sup>Sukijan Athoillah

Sultan Agung Islamic University Semarang, Indonesia

✉ [sukijan@unissula.ac.id](mailto:sukijan@unissula.ac.id)

### Abstract:

This research aims to explore concepts, principles, implementation and challenges in differentiated learning design in elementary schools using a Systematic Literature Review (SLR) approach. The research method used involves collecting, analyzing and synthesizing various previous studies related to differentiated learning at the elementary school level. The research results show that a differentiated learning approach can improve student engagement and academic outcomes by adapting content, processes, and evaluation according to individual needs. However, there are obstacles to its implementation, such as limited teacher understanding, lack of resources, and minimal policy support. With continuous evaluation and collaboration between teachers, students and parents, differentiated learning can be implemented more effectively. The results of this research provide academic insight as well as practical recommendations for educators and policy makers in improving the quality of basic education that is more inclusive and adaptive to student needs.

### Keyword

*Differentiated Learning, Elementary Education, Systematic Literature Review (SLR)*

### How to cite:

Sukijan, A. (2025). Differentiation Learning Design In Primary Schools: Systematic Literature Review. *Journal of Elementary School Research and Development*, 1(1), 1–10.

### Article History

Enter	Revised	Accepted
21/01/2025	28/03/2025	15/5/2025

## INTRODUCTION

Education in elementary schools has a crucial role in forming students' academic foundations and character (Dewi, E. R., & Alam, A. A. 2020; Lian, et al., 2020). However, the main challenge in basic education is the heterogeneous diversity of characteristics of students in one class. Students differ in cognitive abilities, socio-economic backgrounds, learning styles, and levels of academic readiness. Conventional learning approaches which tend to be uniform are often unable to accommodate these differences, causing some students to experience difficulty in understanding the material while others feel less challenged (Alfaid & Hayani, 2024). Therefore, the need arises for learning strategies that are more flexible and responsive to individual student needs. One approach that is increasingly being used to overcome this challenge is differentiated learning design. This approach allows teachers to adapt learning content, processes, and products to suit the diversity of students in the class. Even though differentiated learning has been widely implemented in various educational contexts, there are still challenges in its implementation in elementary schools, both in terms of teacher readiness, policy support, and the effectiveness of the methods used (Bondie et al., 2019).

In the context of basic education, learning that does not consider student diversity can lead to significant academic gaps. Students with quicker comprehension may feel bored with material that is too simple, while students who are slower to comprehend material may have difficulty catching up. This can reduce students' learning motivation and impact overall academic achievement. In addition, a uniform learning approach can also hinder the development of students' critical thinking, creativity and collaboration skills, which are very important in facing the challenges of the modern world. Therefore, implementing differentiated learning in elementary schools is a strategic step in creating a more inclusive

and effective learning environment (Johler & Krumsvik, 2024), where every student has the same opportunity to develop according to their respective potential. With proper implementation, differentiated learning can be a solution to improve the quality of basic education and reduce academic gaps that still occur in many schools.

Furthermore, various studies show that the implementation of differentiated learning not only has an impact on improving students' academic results, but also contributes to increasing their learning motivation and involvement in the learning process. When students are given the opportunity to learn in a way that suits their needs, they tend to be more active in participating in lessons and demonstrate a deeper understanding of the material. In addition, differentiated learning can also help teachers identify the special needs of each student and adjust their teaching strategies to be more effective (Onyishi & Sefotho, 2020). Thus, it is important for the education system to further encourage the implementation of differentiated learning in elementary schools through strengthening teacher capacity, developing a more flexible curriculum, as well as clearer and more targeted policy support.

This research aims to explore the concept, implementation and challenges in differentiated learning design in elementary schools through a Systematic Literature Review (SLR) approach. Using this method, the research will collect, analyze and synthesize findings from various previous studies in order to obtain a more comprehensive understanding of differentiated learning practices at the elementary school level. This study aims to identify strategies that have been proven effective, factors that influence successful implementation, as well as challenges faced by educators in implementing this approach. Thus, it is hoped that the results of this research can contribute to the development of educational policies and learning practices in elementary schools that are more inclusive and adaptive to student needs.

Although differentiated learning has been widely discussed in the academic literature, there are several research gaps that still need to be studied more deeply. Most previous research focuses more on the implementation of differentiated learning at secondary or higher education levels, while studies regarding its implementation in elementary schools are still limited. In addition, many studies highlight the effectiveness of differentiated learning in improving student academic outcomes without in-depth discussing the challenges faced by teachers in its implementation. The study also shows that there is a gap between policies supporting differentiated learning and its implementation in the field, where many teachers still face obstacles in effectively adapting their teaching strategies to students' needs. Therefore, this research aims to fill this gap by providing a comprehensive mapping of how differentiated learning is implemented in elementary schools as well as the factors that support and hinder its success.

The novelty and distinction of this research lies in its approach which uses the Systematic Literature Review (SLR) method to analyze various previous studies systematically and thoroughly. In contrast to other research which only focuses on aspects of effectiveness or specific case studies, this research will present a synthesis of findings from various studies that have been conducted in various basic education contexts. In addition, this research will contribute in the form of strategic recommendations for educators and policy makers in optimizing the implementation of differentiated learning in elementary schools. Thus, the results of this research not only provide academic insight but also practical benefits in improving the quality of basic education that is more inclusive and adaptive to student needs.

## **RESEARCH METHODS**

This research uses a Systematic Literature Review (SLR) approach, namely a library research method that aims to systematically identify, assess and synthesize previous research (Nightingale, 2009). This method is carried out through a series of stages which include formulating research questions, searching for literature in leading academic databases such as Scopus, Web of Science, and Google Scholar, as well as a process of selecting relevant articles based on inclusion and exclusion criteria. In this research, only articles discussing the implementation of differentiated learning in elementary schools will be analyzed further. The selection process is carried out by reviewing the abstract, methodology and main findings of

each article to ensure that the studies used are relevant to the research focus. The data obtained was then analyzed using the thematic synthesis method to identify patterns, gaps and trends in the implementation of differentiated learning in elementary schools.

In addition, this research uses a descriptive-qualitative approach, where the results of the literature synthesis will be presented in the form of a narrative analysis that describes the main findings from various studies. This approach allows research to explore in depth how differentiated learning is implemented in various elementary school contexts, including the strategies used by teachers, the challenges faced, and the impact on students' academic development. With this approach, research is expected to provide comprehensive insight into differentiated learning practices as well as recommendations for educators and stakeholders in optimizing the implementation of this approach in elementary schools.

## **FINDINGS AND DISCUSSION OF RESULTS**

### **A. Differentiated Learning Concepts in Heterogeneous Classes**

Differentiated learning is an educational approach designed to meet diverse learning needs in heterogeneous classes. In a classroom environment consisting of students with different backgrounds, abilities and learning preferences, differentiated learning becomes a very relevant strategy for creating an inclusive learning experience (Lindner et al., 2019). Each student has unique characteristics in absorbing information, both in terms of speed of understanding the material, dominant learning style, and other factors such as interests and previous experience. Therefore, this approach allows students to learn according to their capacity, so that they can develop optimally in a supportive environment and not feel pressured by demands that do not match their abilities. With the right strategy, teachers can adjust teaching materials, delivery methods, and evaluation forms to align with the needs of each student. In this context, differentiated learning functions to create more personalized and relevant learning conditions, providing equal opportunities for each student to develop without experiencing obstacles caused by their individual differences.

The basic concept of differentiated learning is to provide opportunities for each student to learn in a way that suits their abilities, interests, learning style and background. In heterogeneous classes, this diversity creates both challenges and opportunities for teachers to develop more flexible and adaptive approaches to teaching (Pozas et al., 2020). For example, some students may understand material more quickly through a visual approach such as diagrams or illustrations, while others are more comfortable with an auditory approach through discussion or verbal explanation. Apart from that, there are also students who find it easier to understand concepts through direct experience or a kinesthetic approach. By implementing differentiation in learning, teachers can accommodate these differences by providing appropriate learning method options, such as providing project-based assignments for students who prefer practical exploration, or providing additional reading material for those who prefer to explore theory independently. Thus, differentiated learning not only ensures that students do not feel left behind or burdened, but also gives them space to develop to their best potential. Effective implementation of differentiated learning will create a more harmonious learning environment, where every student feels valued and motivated to achieve optimal learning outcomes (Walid, et al., 2024).

In the context of elementary school education, the application of differentiated learning has a very significant impact on students' academic and social development. Children at this level are in different phases of cognitive and emotional development, so uniform learning is often unable to accommodate their needs optimally. By implementing differentiated learning, teachers can help each student develop a better understanding of teaching material according to their learning speed and style (Smale-Jacobse et al., 2019). For example, students who have higher abilities in mathematics can be given additional challenges to stay motivated, while students who experience difficulties can be given more intensive guidance or more concrete learning media. In addition, in language learning, teachers can present material with various approaches, such as telling stories for students who are more responsive to verbal methods, or using picture cards for those

who are more visual (Victoria, M. 2021). With this approach, every student can feel actively involved in the learning process without feeling isolated or burdened by material that is too difficult or too easy for them.

The use of differentiated learning in elementary schools also contributes to the formation of students' character and self-confidence. In classes that implement differentiation strategies, students have more opportunities to explore their talents and interests, which ultimately increases learning motivation (Arianto et al., 2023). Teachers can adopt more flexible evaluation models, such as individual projects or portfolios, that allow students to demonstrate their understanding in ways that suit their individual strengths. This helps students understand that academic success is not just measured by one particular standard, but by how far they have progressed according to their own abilities. Apart from that, with differentiated learning, social interactions in the classroom also become more dynamic, because students learn to appreciate each other's differences and work together in an environment that supports diversity (Qorib, M. 2024).

Several educational experts have made major contributions to the concept of differentiated learning. One of the main figures who played a role in developing this theory was Carol Ann Tomlinson. Tomlinson defines differentiated learning as a process of adapting instruction to meet individual student needs (Tomlinson & Jarvis, 2009). He explained that differentiation can be done through four main aspects, namely content (what is taught), process (how students learn the material), product (how students show their understanding), and learning environment (the conditions in which learning takes place). Tomlinson emphasized the importance of flexibility in learning, where teachers must be able to identify the unique needs of each student and design teaching strategies that can accommodate this diversity. Apart from that, he also emphasized the importance of using formative assessment on an ongoing basis to adapt learning to the development of each student.

Apart from Tomlinson, Lev Vygotsky also made a significant contribution to differentiation learning through the concept of the Zone of Proximal Development (ZPD). Vygotsky explained that students have two levels of development: the level of actual development (abilities that can be achieved alone) and the level of potential development (abilities that can be achieved with the help of others) (Taukeni, 2019). Differentiated learning is very relevant to this theory because it allows teachers to provide appropriate guidance according to the level of development of each student. In practice, teachers can use scaffolding strategies, namely providing additional support such as instructions, guiding questions, or learning models to help students achieve deeper understanding. By applying the ZPD principle in differentiated learning, teachers can ensure that each student receives challenges that are appropriate to their capacity, so that they can develop optimally without finding it too difficult or too easy to learn.

## **B. Principles of Differentiated Learning**

One of the main principles in differentiated learning is respect for the uniqueness of each individual student. Teachers need to recognize that each student has different abilities, learning styles and interests, so flexible and adaptive learning strategies are needed. By understanding the characteristics of each student, teachers can design activities that enable them to learn in the most appropriate and effective way (Griful-Freixenet et al., 2020). This principle emphasizes that not all students have to do the same tasks in a uniform way, but rather are given choices that suit their needs and potential. For example, in learning to read, some students may be more comfortable with independent reading methods, while others understand the material better through group discussions or visual approaches such as diagrams and concept maps. By providing a variety of learning options, teachers not only provide wider opportunities for students to achieve better understanding, but also increase their motivation and participation in the learning process. Additionally, this approach prevents more advanced students from feeling bored and less challenged, while students who need more guidance don't feel left behind or stressed. Therefore, differentiated learning not only increases learning effectiveness, but also creates an inclusive learning atmosphere and supports diversity in the classroom.

To realize this principle, teachers can apply various teaching methods and adjust the level of difficulty of the material according to the abilities of each student. One strategy that can be used is to provide assignments with different levels of complexity, so that students can choose challenges that suit their capacities (Ulandari et al., 2019). For example, in mathematics learning, teachers can provide several sets of problems with varying levels of difficulty, allowing students to work on problems according to their understanding. Apart from that, the use of educational technology can also help in implementing differentiated learning. Interactive learning apps allow students to learn at their own pace and provide immediate feedback, so they can understand the material better. Teachers can also use formative assessments on an ongoing basis to monitor student progress and adjust learning strategies according to their needs. Apart from differentiation in materials and methods, an inclusive learning environment also plays an important role in supporting differentiated learning. Flexible classroom arrangements, the use of visual aids, and the provision of emotional support can help create a more conducive learning atmosphere for all students.

Apart from that, differentiation learning also has the principle of flexibility in the learning process, which means that teachers must have the ability to adjust learning plans based on student development and needs. This flexibility covers various aspects, ranging from teaching methods, use of learning media, to evaluation strategies used to measure student understanding. In a class consisting of students with varying levels of ability, a uniform approach will not be effective because not all students can absorb information in the same way (Gheysens et al., 2022). Therefore, teachers need to use various teaching techniques, such as group discussions, project-based learning, and the use of interactive technology to support various student learning styles. For example, some students may understand concepts better with a visual approach such as diagrams or animated videos, while others may more easily grasp the material through hands-on experiments or case studies. By providing choices in how to learn, students will be more actively involved in learning, which ultimately improves their academic results. Apart from that, flexibility can also be applied in the delivery of material by providing a variety of assignments that can be adjusted to the student's level of readiness. For example, students who have a quicker grasp may be given more complex assignments or independent exploration-based projects, while students who need more guidance may be given additional material or special mentoring sessions. Thus, flexibility in differentiated learning not only helps accommodate students' varying needs, but also ensures that they have a more effective and meaningful learning experience.

Flexibility in differentiated learning is also closely related to the use of various assessment strategies, so that teachers can evaluate student understanding more accurately and fairly. Assessment in differentiated learning is not only focused on the final results, but also on the learning process experienced by each student. Therefore, teachers can use various forms of assessment, such as formative assessments which are carried out periodically to see student progress, summative assessments to measure overall understanding, and portfolio-based assessments which provide a more comprehensive picture of student achievement (Lindner et al., 2019). In the context of flexibility, teachers can also provide choices in how students demonstrate their understanding of material. For example, in language courses, some students may choose to write essays as a form of evaluation, while others may create presentations or videos to explain their understanding. Thus, assessment is not only a tool for measuring learning outcomes, but also a means for students to express their abilities in a way that best suits their potential. Apart from that, a supportive learning environment is also part of the flexibility in differentiated learning. Teachers can create a more dynamic classroom atmosphere by giving students the freedom to study in small groups, independently, or even with direct guidance according to their needs.

Differentiated learning in heterogeneous classes also emphasizes the importance of collaboration between teachers, students and parents as a key element in creating an effective and sustainable learning experience. Teachers have a primary role in identifying the unique needs of each student and designing appropriate learning strategies, but the

success of this approach does not depend solely on the teacher's role alone. Open communication between teachers and students is very important to understand the interests, learning styles, and challenges faced by each student in the learning process (El-Sabagh, 2021). By building good relationships, teachers can create a safe and comfortable environment for students to express the difficulties they face and provide feedback regarding the learning methods that are most suitable for them. Apart from that, teachers can also take advantage of discussion and reflection with students to adjust learning strategies, for example by adjusting assignments based on their level of readiness or providing more varied options in learning activities. Meanwhile, the role of parents is also very crucial in supporting the implementation of differentiated learning outside the school environment. Parents can help strengthen students' understanding by providing emotional and academic support at home, such as guiding them in completing assignments, providing additional learning resources, or creating a conducive learning atmosphere. With parents' active involvement in the education process, students will feel more supported in undergoing learning experiences that suit their needs, thereby increasing motivation and self-confidence in learning (Li, et al., 2024; Edwards-Fapohunda, D. M. O. 2024).

Close collaboration between teachers, students and parents also helps ensure that differentiated learning runs optimally and provides maximum benefits for students' academic and social development. In practice, teachers can involve parents in various educational activities, such as consultation sessions or regular meetings to discuss their child's learning progress. Through this ongoing communication, teachers can provide more specific information about students' progress and gain deeper insight into their study habits at home. Apart from that, schools can also organize workshops or seminars for parents to increase their understanding of the concept of differentiated learning and how they can play an active role in supporting this process (Sormunen et al., 2020). Not only that, this collaboration can also be strengthened through the use of technology in learning, such as digital platforms or educational applications that allow teachers, students and parents to interact and share information in real-time. With a synergistic approach between school and family, students can gain a more comprehensive and sustainable learning experience. Learning that is not limited only to the classroom, but is also reinforced with support from the outside school environment, will help students develop critical thinking skills, independence and a sense of responsibility for their own learning process.

The final principle in differentiated learning is continuous evaluation, which is an important aspect in ensuring that each student obtains an effective learning experience that meets their needs. This evaluation must be carried out continuously, not only in the form of summative assessments that measure the final learning outcomes, but also formative assessments that provide an overview of student development throughout the learning process (Kaur et al., 2019). In this approach, teachers not only assess how well students master the material, but also understand how they learn, the obstacles they face, and the strategies that are most effective for them. Therefore, continuous evaluation not only measures achievement, but also becomes a reflection tool for teachers to adjust their teaching methods. One effective way to carry out differentiation evaluations is to provide various forms of assessment that suit students' abilities and learning styles, such as interactive quizzes, research-based projects, digital portfolios, or creative presentations. By providing variations in assessment, students can demonstrate their understanding in a way that best suits their potential, so that evaluation does not become an obstacle to learning, but instead becomes a tool to increase student self-confidence and motivation. Apart from that, formative assessments such as observations, reflective discussions, and learning journals can also help teachers identify specific student needs and provide more targeted interventions.

Apart from providing feedback on evaluation results, teachers must also ensure that the feedback provided is constructive, clear, and can help students improve their understanding. Good feedback not only points out students' mistakes or shortcomings, but also provides concrete guidance on how they can improve and develop themselves.

With this approach, students will not feel burdened by evaluations, but instead see them as part of the learning process that helps them grow academically and personally. In practice, teachers can use techniques such as independent reflection, one-on-one discussions, or even peer mentoring to provide students with opportunities to understand their own progress and set clearer learning goals. Moreover, continuous evaluation allows teachers to adjust learning strategies flexibly according to student development (Westbroek et al., 2020). If it is found that a particular method is less effective for certain groups of students, the teacher can immediately change or modify the approach used. In this way, differentiated learning becomes more dynamic and responsive to student needs. This ongoing evaluation also provides a foundation for teachers to design more inclusive learning, ensuring that every student has the same opportunity to succeed in a heterogeneous classroom environment.

### **C. Differentiated Learning Design in Elementary Schools**

Differentiated learning design in elementary schools is a strategic approach that aims to meet the diverse learning needs of students in heterogeneous classes. At elementary school level, students have different levels of cognitive, social and emotional development, so a uniform learning approach is often ineffective in achieving optimal learning outcomes. Differentiated learning allows teachers to design learning activities that suit the characteristics of each student, both in terms of academic abilities, learning styles and interests. In its implementation, differentiation learning design can be applied through three main aspects, namely differentiation of content (material), process (how to learn), and product (learning outcomes) (Griful-Freixenet et al., 2020). Content differentiation refers to variations in the delivery of material according to student readiness and needs. Students who understand more quickly can be given material with a higher level of complexity, while students who need further guidance can be given assistance or simplified material. Process differentiation focuses on diverse learning methods, such as the use of visual aids, group discussions, experiments, or project-based learning to accommodate various student learning styles. Meanwhile, product differentiation gives students flexibility in demonstrating their understanding, for example through presentations, written reports, creative videos, or technology-based projects. By implementing a differentiated learning design, elementary schools can create a learning environment that is more inclusive and responsive to the diversity of students, so that they can develop their potential optimally.

To implement differentiated learning design effectively in elementary schools, teachers need to carry out an in-depth and continuous analysis of student needs. This process begins with a diagnostic assessment which aims to identify each student's learning readiness, interests and learning style. Teachers can use various techniques, such as classroom observations, interviews, questionnaires, or analysis of students' work to understand their learning profiles (Ramírez-Montoya, et al., 2021; Idkhan, A. M., & Idris, M. M. 2021). After getting a clear picture of student diversity, teachers can design flexible and adaptive learning strategies. One approach that can be used is a center-based learning system (learning stations), where students are grouped based on their learning needs and given appropriate tasks. For example, in mathematics learning, one group of students can work on practice questions with direct guidance from the teacher, while another group explores concepts through educational games or small group discussions. Apart from that, a project-based learning approach can also be applied to provide a more in-depth and contextual learning experience for students (Mutanga, 2024). With projects designed to suit their level of readiness and interests, students not only gain a better understanding of the material, but also develop critical thinking, collaboration, and creativity skills. Thus, differentiated learning design focuses not only on academic achievement, but also on developing 21st century competencies that are essential for students' futures.

Implementing differentiated learning designs in elementary schools also requires support from various aspects, including the use of educational technology and parental involvement. Technology can be a very effective tool in supporting differentiated learning, especially in providing more varied learning resources and allowing students to

learn at their own pace. For example, the use of digital learning platforms can allow students to access additional materials, work through interactive exercises, or watch educational videos appropriate to their level of understanding. In addition, teachers can use technology-based assessment applications to monitor student progress in real-time and adjust the learning strategies used (Blundell, 2021). Apart from the use of technology, parental involvement also plays an important role in supporting the success of differentiated learning. Parents can help by creating a conducive learning environment at home, providing motivation to their children, and communicating actively with teachers regarding their child's learning progress. Schools can also hold workshops or training sessions for parents to increase their understanding of the concept of differentiated learning and how they can play a role in supporting it. With synergy between schools, technology and families, differentiated learning can be implemented more effectively and have a greater positive impact on student development (Timotheou, et al., 2023; Bonal, X., & González, S. 2020; Weingarten, et al., 2020).

Although differentiated learning design has many benefits in improving the quality of education in elementary schools, its implementation also faces various challenges. One of the main challenges is the increasing workload of teachers, as they have to design more complex learning strategies and adapt them to the needs of each student. To overcome these challenges, it is important for schools to provide adequate training and support for teachers so that they have the skills and resources needed to implement differentiated learning. Apart from that, limited time in implementing classroom learning is also an obstacle that needs to be overcome with effective time management and the use of technology to speed up the assessment process and adapt learning strategies. Apart from that, school cultural factors that are still oriented towards traditional learning approaches can also be an obstacle in implementing differentiated learning (Ginja & Chen, 2020).

Therefore, there needs to be a paradigm shift in the education system, where learning is no longer one-way, but is more flexible, interactive and student-centered. With commitment and collaboration from all parties involved, differentiated learning design can be an effective solution in improving the quality of education in elementary schools and ensuring that every student gets equal learning opportunities according to their potential.

## CONCLUSION

Differentiated learning design in elementary schools is an effective approach in accommodating the diversity of student characteristics in heterogeneous classes. By implementing appropriate strategies, such as content differentiation, process, and evaluation, teachers can create a more inclusive learning environment and encourage active student engagement. Differentiated learning not only improves students' academic results, but also helps develop critical thinking skills, creativity and independence in learning. However, the implementation of differentiated learning still faces various challenges, including a lack of teacher understanding, limited resources, and a lack of specific policy support. Therefore, greater efforts are needed in providing training for educators, developing a more flexible curriculum, and creating policies that can support the widespread implementation of differentiated learning in elementary schools.

In addition, this research confirms the importance of continuous evaluation in implementing differentiated learning. Teachers need to continuously monitor student progress and adjust their learning strategies to be more effective. Evaluation that not only focuses on the final result but also on the learning process will help create a more meaningful learning experience for each student. The findings from this research also show that the success of differentiated learning is very dependent on collaboration between teachers, students and parents in creating a conducive learning environment. Thus, to ensure the sustainability and effectiveness of differentiated learning, synergy is needed between various related parties, both within the school and in broader education policies.

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