



Evaluation of Differentiated Learning in the Independent Curriculum on Learning Outcomes of Science Content of Grade 5 Elementary School Students

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Abstract

This study aims to investigate the implementation and evaluation of the differentiated learning model in the independent curriculum. In the differentiated learning model, teachers must pay attention to the individual needs of each learner, identify learners' interests and abilities, and different learning styles, and choose appropriate teaching strategies for each learner. In addition, teachers also need to provide a variety of choices in learning activities and assessment, so that students can choose how to learn and assess themselves. This research method uses qualitative with descriptive research type. the data source of this research is through classroom observation, interviews with teachers, and document analysis. The results of the analysis show that the context of differentiated learning, including the school environment and administrative support, plays an important role in successful implementation. The research can be concluded that the implementation of differentiated learning models in the independent learning curriculum pays attention to the principles of individualism, comprehensive learning achievement, learner motivation, learner context or background, student interests and needs, normalization, integration assessment, material selection, grouping learners according to their learning needs, facilitating learning media and guiding learners to analyze a product.

Keywords: Differentiated Learning, Learning Evaluation, Learning Effectiveness

1. INTRODUCTION

The current independent curriculum has different characteristics compared to the 2013 curriculum, which lies in differentiated learning. The Independent Curriculum is closely related to the differentiated learning process which opens up opportunities to achieve learning objectives. The Merdeka Curriculum was created so that students feel more free in education and can develop their potential according to the interests and talents of the students themselves and the teacher (Fauzia & Ramadan, 2023). The curriculum itself is the "spirit" in the world of education which needs to be evaluated regularly following the times and science and technology (Fitria & Budi, 2023). In the world of education, the curriculum in Indonesia has undergone curriculum development eleven times.

The education system in Indonesia requires a breakthrough that is able to provide enlightenment that is more open, directed and unlimited. In this case, the government is improving the quality of education, the Indonesian government is changing the way teachers view that humans have unique and extraordinary abilities and can overcome various problems that teachers will encounter in the classroom, which this program is called Merdeka Belajar (Fauzia & Ramadan, 2023). According to Law No.20 of 2003 (2003) "the curriculum is a set

of learning plans related to objectives, content, teaching materials and methods used and used as guidelines in organizing learning activities to achieve a national education goal"(Barlian dkk., 2023).

One approach that can be used to implement an independent curriculum is differentiated learning, which requires teachers to pay attention to differences in learning styles, interests, and abilities of students and provide them with learning experiences tailored to their individual needs (Agustiana dkk., 2023). Differentiated learning provides guidance and perspective for teachers and focuses on four elements including process, content, product and learning environment (Agustiana dkk., 2023).

Differentiated learning is a learning model that allows teachers to meet the individual learning needs of each learner. Teachers adjust subject matter, teaching methods, and learning approaches according to the abilities, interests, and needs of each learner. The aim is that learners do not feel frustrated or fail in their learning process (Sarnoto, 2024.). The best learning process for students in the classroom stimulates student development both in absorbing and listening to material as part of the learning process carried out by the teacher (Agustiana dkk., 2023). Teachers in the learning process must be able to understand the potential and interests of each student through the skills and role of the teacher as the main leader of learning in achieving success and achievement in achieving learning goals (Zein, 2016). Basically, in the teaching and learning process, teachers have an important role in transmitting knowledge or teaching materials and must be clearly understood by students. One of the teacher's tasks is to determine the right learning model for learning (Agustiana dkk., 2023).

Differentiated learning is an effort to create a diverse classroom and then students have the opportunity to choose content, generate ideas, and achieve learning outcomes for all students to achieve the highest efficiency (Agustiana et al., 2023). In other words, differentiated learning is learning that provides learning for all students based on their needs, taking into account the diversity of all students.

(Agustiana et al., 2023). Ideally, learning development involves teacher activity and creativity which is very important in the student learning process (Agustiana et al., 2023). In this case, students become the focus of active learning and have the potential to develop according to their interests and needs.

In differentiated learning, ideally teachers need to understand that there is no single way or method that is suitable for all learners. Each child has different abilities, interests and learning needs (Sarnoto, 2024). Teachers should organize subject matter, classroom activities, assignments and assessments based on each learner's readiness level, interests and learning style. The aim is to ensure that the learning approach used matches the individual needs and characteristics of each learner (Sarnoto, 2024).

In connection with this, the education system regarding learning in the world is very diverse, one of which is the differentiated learning system. Differentiated learning is a way to understand and provide knowledge according to the talents and learning styles of students who have many characters (Wahyuni, 2023). Then, the purpose of the differentiated approach is to meet the needs of students so that they can feel the freedom of learning because they learn according to what they want. One approach that can be used to implement an independent curriculum is differentiated learning, which is a teacher approach that pays attention to differences in learning styles, interests, and abilities of students and provides them with learning experiences tailored to their individual needs (Pane dkk., 2022). Differentiated learning as an approach requires teachers to pay attention to differences in learning styles, interests and abilities of students, and provide learning experiences tailored to the individual needs of children (Aprima & Sari, 2022). Differentiated learning provides guidelines and perspectives

for teachers and focuses on four elements including process, content, product and learning environment (Marlina, 2020).

Implementing differentiated learning is not easy, teachers need to understand the needs and characteristics of students well, and provide various types of learning resources and learning activities that can be accessed and carried out by students in different ways. One of the lessons that students receive in education as stated in the curriculum in elementary school is science learning, in elementary school science plays an important role in shaping students' understanding and skills. However, often the learning applied in homogeneous classes does not consider differences in student characteristics. Therefore, a differentiated learning approach is needed to overcome individual student differences.

Student-centered education emphasizes the process aspect of how students learn and the effect of the learning process on the development of the students themselves, especially in science lessons. The science learning process that applies values by setting an example (ing ngarso sung tuladha), building willingness (ing madya mangun karsa), and developing students' creativity in the learning process (tut wuri handayani) is part of Ki Hajar Dewantara's educational philosophy is the "among" system, namely the teacher must be able to guide students to develop according to their nature (Apriliani dkk., 2023).

Science learning involves student activeness, both physical activity and mental activity and focuses on students, which is based on daily experiences. Science of Nature Education (IPA) emphasizes direct experience to find out and do so as to be able to explore and understand nature in the surrounding environment scientifically. During learning students will have a meaningful learning experience so that at this stage students are able to develop the values of science learning. Student-centered learning is very effective in the student learning environment (Sutarto & Syarifuddin, 2013; Nisa et al, 2022).

As future educators, it is necessary to make learning innovations that aim to accommodate the needs of students in science material by implementing differentiated learning. Today's differentiated method is believed to have its own characteristics in the learning process.

learning so that it is expected to provide benefits about the application of learning at the elementary school level. To obtain the results of reflection or improvement of learning, first carry out an initial diagnosis, design differentiated learning implementation (RPP) using methods that are in accordance with the learning objectives, and implement it and evaluate the results of the learning process.

The best learning process for students in the classroom stimulates student development both in absorbing and listening to material as part of the learning process carried out by the teacher (Fitriani dkk., 2023). Basically, in the teaching and learning process, teachers have an important role in transmitting knowledge or teaching materials and must be clearly understood by students. One of the teacher's tasks is to determine the right learning model for learning (Yestiani & Zahwa, 2020).

Differentiated learning is an effort to create a diverse classroom and then students have the opportunity to choose content, generate ideas, and achieve learning outcomes for all students to achieve the highest efficiency (Faiz, 2022). In other words, differentiated learning is learning that provides learning for all students based on their needs, taking into account the diversity of all students taught (Maryam, 2021). Ideally, learning development involves teacher activity and creativity which is very important in the student learning process (Buchari, 2018). In this case, students become the focus of active learning and have the potential to develop according to their interests and needs.

Components of Differentiated Learning

Teachers should be able to differentiate at least four classroom elements based on students' readiness, interest or learning profile as follows:

- 1) Content: Using reading materials at various reading levels, Using spelling lists or vocabulary at students' readiness levels, Presenting ideas through auditory and visual means, Using reading buddies and Meeting with small groups to reteach ideas or skills to struggling learners, or to extend the thinking or skills of advanced learners.
- 2) Process: Using tiered activities where all learners work with the same essential understandings and skills, but proceed with different levels of support, challenge, or complexity, Providing centers of interest that encourage students to explore subsets of the class topic that interest them, Varying the length of time students can complete tasks to provide additional support for struggling learners or to encourage advanced learners to pursue topics in greater depth.
- 3) Product: Giving students choices about how to express required learning (e.g., creating a puppet show, writing a letter, or developing a mural with labels), Using rubrics that match and extend students' varied skill levels, Allowing students to work alone or in small groups on their products; and Encouraging students to create their own product assignments as long as they contain required elements.
- 4) Learning Environment: Ensuring there are places in the room to work quietly and without distraction, as well as places that invite student collaboration, Providing materials that reflect different cultures and home settings, Setting clear guidelines for independent work that suit individual needs, Developing routines that allow students to get help when the teacher is busy with other students and cannot help them immediately; and Helping students understand that some learners need to move around to learn, while others are better off sitting quietly (Tomlinson, 1995).

Principles of Differentiated Learning

According to Bayumi et al. (2021: 25), there are eight principles in differentiated learning, as follows:

- 1) Continuous assessment in learning.
- 2) Teachers ensure a learning process that recognizes the existence of all learners.
- 3) Flexible grouping of learners.
- 4) There is continuous collaboration and coordination between class teachers/study area teachers and special educator teachers.
- 5) Teachers and learners work together to build commitment to realizing expected learning outcomes.
- 6) Flexible use of time in responding to learners' learning processes and outcomes.
- 7) Varied learning strategies.

Differentiation strategy

Differentiation strategy is an effort made to implement differentiated learning by paying attention to learning activities that can accommodate students according to their needs and learning profiles (Bayumi et al., 2021: 31). There are three differentiation strategy activities that can be carried out as follows:

- 1) Content Differentiation
Refers to the strategy of differentiating the organization and delivery format of content. Content is the material knowledge, concepts, and skills that learners need to learn based on the curriculum.
- 2) Process Differentiation

Refers to the strategy of differentiating the process that learners need to undergo to enable them to practice and understand the content.

3) Product Differentiation

Refers to the strategy of modifying the product of learner learning, the result of practicing, applying, and developing what has been learned.

Advantages of Differentiated Approach

The advantages obtained in applying a differentiated approach include (Jatmiko, H. T. P. and Putra, 2022):

- 1) Flexible, in the learning process is not beaten equally between one learner and another must be the same, but learners will learn in groups according to the talents, interests, and abilities of each learner. This will make it easier for students to capture learning material and make students comfortable in learning.
- 2) Learning tasks are given based on the interests and status of each student but still adhere to the learning objectives that have been planned before Learning is based on the learning needs of each learner Learners will learn with the same curriculum but with different success criteria.
- 3) Learners can determine their own preferred way of learning.

Based on the results of interviews conducted with the fifth grade teacher of SD Negeri Manggarai 09 Pagi in the South Jakarta area, namely Mrs. Asih Tripy, S.Pd. as the fifth grade teacher. The results obtained show that there is a diversity of students in class V where each student has different talents and interests and abilities so that the teacher must facilitate students according to what is needed. There are students who are active, there are students who like to read, and there are also students who like to watch videos. Therefore, the fifth grade teacher at SD Negeri 09 Manggarai tries to apply a differentiated learning model to overcome these problems.

This research is important to do because as we know that students must have different talents and interests, so the task of an educator must be smart to manage the class so that each student can be interested and happy in participating in learning. Therefore, this research is very important because it can optimize student learning outcomes. If, this model can improve student learning outcomes, then this research can improve student learning outcomes and achievement, by designing learning experiences that are tailored to the individual needs of students, this research can improve student learning outcomes and overall academic achievement. Students will be better able to achieve their academic potential with the right support and differentiation.

Based on the results of the interview, the researcher is interested in researching this because it is considered that not many have conducted research on this differentiated approach. So that curiosity arose in the researcher to go directly to the field and research it himself. If this research is successful, it is hoped that it can be a reference for educators and can add insight so that educators can apply it to their students to improve their learning outcomes. This research aims to improve students' learning experiences and outcomes by designing, implementing and evaluating more inclusive, responsive and effective learning approaches. There are three studies that are relevant to this research, namely research conducted by herwina, wahyuni, and wulandari.

The results of research conducted by (Herwina, 2021) with the title "Optimizing Student Needs and Learning Outcomes with Differentiated Learning" found that differentiated learning can help students to improve their learning outcomes. This is because the products produced are in accordance with the interests of each student. Learners are also free to

determine their learning style according to their talents, interests and abilities so that their needs can be met. In addition, the times will continue to develop, so differentiated learning is a highly recommended learning approach because using this model will support the achievement of learning objectives that have been made before.

Research conducted by (Wahyuni, 2022) entitled "Literature Review: Differentiated Approach in Science Learning" concluded that the use of a differentiated approach can improve student learning outcomes because it can coordinate all the needs of students by taking into account the interests, profiles, learning styles, and learning readiness of each student. Research conducted by (Wulandari, 2022) entitled "Literature Review: Differentiated Approach to Learning Solutions in Diversity" concluded that differentiated learning can improve student learning outcomes because this learning accommodates, serves, and recognizes the diversity in each student, so that teachers prepare the needs of students according to their needs.

Based on previous research, the novelty in this study is focused on evaluating and maximizing the effectiveness of differentiated learning in schools in the capital city of Jakarta, especially SD Negeri Manggarai 09 South Jakarta, which is close to the center of government, whether it has implemented a differentiated learning process properly or not. In addition, this study also adapts to the Merdeka Curriculum so that learning is combined with science subjects.

2. METHOD

This research is a qualitative research with descriptive case study (Creswell, 2007). Qualitative research with a descriptive case study approach was chosen because this research allows researchers to investigate in depth the implementation and impact of differentiated learning practices in a specific learning environment, such as in one classroom or one school (Creswell, 2016). This allows an in-depth analysis of what factors influence its effectiveness, namely teachers in differentiated learning practices. The research informant is the fifth grade homeroom teacher of SD Negeri 09 Manggarai, Jakarta. The data collection techniques used in this research are semi-structured interviews and non-participant observation (Abdussamad 2022). The data obtained were then analyzed using the Milles and Hebarman analysis model (Sugiyono, 2013).

3. Results and Discussions

Differentiated learning aims to meet students' individual learning needs, but in practice, many challenges hinder its effectiveness in primary schools. Evaluation of the implementation of differentiated learning shows some significant negative impacts including:

Limited Materials and Time

Teachers often face difficulties in finding or creating appropriate teaching materials for different levels of students. This is compounded by insufficient time to plan and manage differentiation effectively. These limitations result in the quality of materials provided being uneven, and some students may not get the learning that suits their needs.

The results are in line with the research findings which explain that time constraints are often a major obstacle. Teachers feel that they do not have enough time to prepare teaching materials that suit students' different learning styles, especially in the context of differentiation, although many teachers recognize the importance of differentiated learning (Hoadley & Hunter, 2018), they experience difficulties in

implementing it effectively due to time and material constraints (Suprayogi et al., 2017). However, research conducted by (Prast et al., 2018) suggests that effective professional development can help teachers overcome some time and material limitations. This study recommends ongoing support and additional training to help teachers better manage their time and resources.

Recent research shows that despite a growing awareness of the importance of differentiated learning, teachers still face significant limitations in terms of time and materials. High workloads, lack of time for planning and preparation, and lack of adequate resources are the main challenges hindering the effective implementation of differentiated learning strategies. Additional support, ongoing professional training and better provision of resources are urgently needed to help teachers overcome these challenges.

Student Engagement and Motivation

Inappropriate differentiation can lead to feelings of unfairness among students. Students who feel they are treated differently may lose interest and motivation in learning. In addition, students who always get easier material may feel unchallenged, which negatively impacts their academic and skill development.

Studies show that differentiated learning that matches students' learning styles can increase their engagement and motivation to learn. However, student engagement can decrease if teachers are inconsistent in applying differentiation strategies or if students feel that the approach used is unfair. The results are in line with research findings that explain Students who feel that learning is relevant to their needs and preferences are more likely to be actively involved in learning activities (Massaad & Chaker, 2020).

This recent research shows that differentiated learning can increase student engagement and motivation when implemented well. Students who feel that learning is relevant and appropriate to their needs are more likely to be engaged and motivated. However, challenges such as limited time, resources and consistency in implementation remain barriers. Additional support, professional training and provision of adequate resources are essential to help teachers overcome these challenges and ensure that differentiation strategies can be effectively implemented to increase student engagement and motivation.

Assessment Inconsistency and Quality of Learning

The implementation of differentiation leads to variations in assignments and assessments, which makes it difficult to measure student achievement fairly. These inconsistencies can make it difficult to determine whether students truly understand the material or are simply completing easier tasks. It also creates disparities in the quality of learning among students in the same class.

The results of the study are in line with research findings which show that teachers often face difficulties in maintaining assessment consistency, differences in teachers' understanding and application of differentiation strategies lead to variations in assessment, which can affect the accuracy and fairness of student assessments (Ginja & Chen., 2020). Although differentiated learning can improve the quality of learning by making it more suited to students' individual needs, inconsistency in assessment

remains a major challenge. Teachers often use a variety of different assessment methods, which can cause variations in assessment results and affect the fairness and accuracy of student assessments. To address this issue, clearer assessment standards, continuous training for teachers, and more uniform and structured assessment tools are needed.

This recent research shows that while differentiated learning can improve the quality of learning by making it more suited to students' individual needs, inconsistency in assessment remains a major challenge. Teachers often use a variety of different assessment methods, which can cause variations in assessment results and affect the fairness and accuracy of student assessments. To address this issue, clearer assessment standards, continuous training for teachers, and more uniform and structured assessment tools are needed.

Teacher Workload and Training

Implementing differentiated learning requires more time and effort from teachers, which can lead to increased workload, stress and burnout. In addition, the lack of training leaves many teachers feeling unprepared and lacking confidence in implementing this strategy effectively. Without adequate support and training, teachers may struggle to implement differentiated learning well.

This study found that high workload is one of the main barriers for teachers in implementing differentiated learning. Teachers who feel burdened by additional tasks and administrative responsibilities tend to have difficulties in providing truly differentiated learning (Suprayogi et al., 2017). According to Digna & Widyasari (2023) showed that many teachers feel less confident in implementing differentiation due to lack of adequate training. However, research conducted by (Admiraal et al., 2021) showed that collaboration between teachers in the community can help reduce individual workload by sharing resources and teaching strategies.

Recent research shows that high workload and lack of adequate training are the main barriers for teachers in implementing differentiated learning. While professional training can help reduce workload by providing more effective strategies, many teachers still feel overwhelmed by the demands of providing personalized learning. Support from professional learning communities, use of technology and training focused on time management and classroom management strategies can help overcome these challenges and improve teaching quality.

Learning Style Survey

Learning style assessment, teachers have difficulty in determining the right assessment to determine the learning style that suits the learning style of students, the lack of training in making special assessments makes teachers do trial and error to determine the right assessment to determine the learning style of students.

According to Walkington & Bernacki (2020), an accurate and systematic assessment of learning styles can help teachers design learning that better suits students' needs, thus improving engagement and learning outcomes. However, this research also found that many teachers lack confidence in using learning style assessment results to differentiate instruction effectively.

This recent research suggests that learning style assessments can provide useful insights for teachers in designing lessons that better suit students' individual needs. However, the effectiveness of differentiated learning that relies entirely on learning styles is still debated and requires stronger empirical evidence. The main challenge teachers face is the difficulty in interpreting the results of learning style assessments and integrating them into practical and effective lesson plans. Therefore, additional training and support in the use of learning style assessment as well as a more holistic approach to learning differentiation is recommended to achieve optimal results.

4. Conclusions

Based on the results and discussion above, it can be concluded that, the evaluation of differentiated learning in primary schools shows that although it has good objectives, its implementation still faces many challenges and negative impacts. To overcome this problem, several steps need to be taken including; increased resources and time, schools need to provide more resources and time for teachers to plan and implement differentiated learning. Continuous teacher training, teachers need continuous training to understand and implement differentiation strategies effectively. A phased approach, the implementation of differentiation should be gradual to allow for adaptation by both teachers and students. Feedback and adjustments, teachers should regularly collect feedback from students and make adjustments based on students' needs and responses. By addressing these challenges, differentiated learning can become more effective and provide greater benefits for students in primary schools.

5. Acknowledgments

The authors would like to thank Mrs. Ika Lestari and Mrs. Herlina as the lecturers of this course for the ideas, support and advice that have been given in the preparation of this paper. The author would also like to thank SDN 09 Manggarai, Jakarta, especially the principal, teachers, and fifth grade students who have been willing to help and provide support for the achievement of this research.

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