

Analysis of the Implementation of Differentiated Learning in the Independent Curriculum at SMAN 1 Kutacane

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This study aims to determine the increase in learning outcomes after applying differentiated learning in the implementation of the Merdeka curriculum at SMAN 1 Kutacane. Differentiated Learning is a form of effort in a series of learning that pays attention to the needs of students in terms of learning readiness, student learning profiles, interests and talents. Differentiated learning is in line with the philosophy of educational thought according to Ki Hajar Dewantara, that education provides guidance for all the natural strengths that children have. This research was conducted in Class X-1 plus A at SMAN 1 Kutacane for the 2026-2027 academic year. The research subjects were 33 students. The method used in this research is a class action research method which consists of two cycle actions, namely cycle I and cycle II. This study used a quantitative research method in the form of a written test and a qualitative research method using observation sheets and self-reflection sheets. The results showed that differentiated learning can improve learning outcomes in ICT subjects with the achievement of mastery learning, namely 72.73% in the first cycle and 90.91% in the second cycle.

Keywords: Differentiated Learning, Merdeka curriculum, SMAN 1 Kutacane

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1. Introduction

Education has a broad meaning and is based on the interaction between educators and students in achieving educational goals. This interaction between educators and students takes place in an environment called the educational environment. The educational environment encompasses not only the physical environment but also the social and intellectual environment. Education and learning are related to values, such as educating, cultivating, and developing values in students. The purpose of instilling values in students is to play an active role in helping develop students' potential, abilities, and characteristics in a more positive direction.

Efforts to improve the quality of education in Indonesia have also influenced changes to the current curriculum and learning. Education in Indonesia continues to make improvements for the better, thus positively impacting students. This impact urges educational institutions to change learning content, learning outcomes, instructional methodologies, instructional conditions, evaluation strategies, and learning conditions identified in the educational plan (Baatar et al., 2020; Nasution, 2017). Adjustments to these educational program components can be seen as changes to the educational plan, structured in such a way as to reflect the profile and characteristics of students (Harrison et al., 2018; Singh et al., 2021).

The Merdeka curriculum was created to address learning loss due to the COVID-19 pandemic. The Merdeka curriculum focuses more on essential material and developing student competencies at each stage. The learning process is expected to be more in-depth, meaningful, unhurried, and enjoyable. This empowers

educators to facilitate enjoyable learning for students. Learning that accommodates students' diverse abilities, both in terms of content and process, as well as their learning styles, is called differentiated learning, and this learning is implemented in the current Merdeka curriculum.

Differentiated learning is a crucial way of thinking about the teaching and learning process in the 21st century. Differentiated learning is also known as differential learning. According to Schöllhorn (2000), differential learning is a motor learning model that emphasizes the importance of movement variability and is rooted in the theory of dynamic systems of human movement. Several studies have shown that differentiated learning is widely adopted in motor-based learning contexts (Wagner & Müller, 2008). Differential learning appears to be a promising approach to enhancing creative behavior (Santos, Bastos & Souza, 2014).

Differentiated learning aligns with Ki Hajar Dewantara's educational philosophy, which states that education provides guidance for all of a child's natural strengths, enabling them to achieve the highest level of safety and happiness, both as individuals and as members of society. Therefore, educators can only guide the growth or development of these natural strengths within children, thereby improving their behavior and fostering their natural strengths. In the process of "guidance," children are given freedom, but educators act as "mentors" in providing guidance and direction to prevent children from losing their way and endangering themselves. A "mentor" can provide "guidance" so that children can find their freedom in learning (Herwina, 2021:176).

Differentiated learning is an effort to adapt the classroom learning process to meet the learning needs of each individual. These adjustments relate to students' interests, learning profiles, and readiness to achieve improved learning outcomes. According to Marlina (2019), differentiated learning is an adjustment to students' interests, learning preferences, and readiness to achieve improved learning outcomes. It should be noted that differentiated learning is not individualized learning. Rather, it tends to accommodate students' strengths and learning needs with independent learning strategies. In differentiated learning, teachers are required to continuously understand students to build awareness of their strengths and weaknesses, observe, and assess their readiness, interests, and learning preferences. Furthermore, teachers must also utilize all preferences regarding how students demonstrate their learning preferences (related to content, process, product, and learning environment). Therefore, when teachers continue to learn about the diversity of their students' potential, professional, efficient, and effective learning will be realized.

Many teachers are unfamiliar with how to implement a differentiated learning approach. This is because they have long been accustomed to a one-way, teacher-centered learning process. According to Marlina (2019), in traditional classrooms, student differences are considered a problem, intellectual intelligence is emphasized, student interests are rarely addressed, student learning profiles are rarely considered, assessments are conducted at the end of the lesson to determine who has mastered the material, the teacher solves problems, the teacher sets assessment standards for the entire class, etc. However, in differentiated learning, teachers can freely develop their own potential and that of their students, allowing them to work together to achieve common goals. The use of differentiated learning strategies can provide activities that are tailored to students' needs (readiness, interests, and learning styles) so that students' learning needs can be met. Ultimately, students will be able to learn according to their respective abilities (Andini, 2016:342).

Based on the description above, the researcher is interested in further analyzing the analysis of the application of differentiated learning in the implementation of the independent curriculum at SMAN 1 Kutacane, which can be concluded with the aim of finding out how effective and beneficial it is when using the curriculum.

2. Literature Review and Problem Statement

Differentiated Learning

Differentiated learning is a learning approach designed to accommodate the differences in characteristics, needs, interests, learning readiness, and learning profiles of each student. In the Independent Curriculum, differentiated learning is a key strategy that enables teachers to provide more flexible learning experiences so that all students have the opportunity to develop according to their potential. According to Tomlinson (2017), differentiated learning is implemented through adjustments to content, process, product, and learning environment. Thus, teachers no longer use the same approach for all students, but instead adapt learning strategies based on the results of identifying student learning needs so that learning objectives can be optimally achieved.

Independent Curriculum

The Independent Curriculum is an education policy developed by the Ministry of Education, Culture, Research, and Technology as an effort to improve the quality of learning by providing flexibility to educational units and teachers in designing the learning process. This curriculum emphasizes student-centered learning, strengthening essential competencies, character development through the Pancasila Student Profile, and the application of diagnostic assessments as a basis for developing learning strategies. One important implementation of the Independent Curriculum is the implementation of differentiated learning, which allows teachers to provide learning services tailored to individual students' needs. Therefore, the successful implementation of the Independent Curriculum is greatly influenced by teachers' ability to design adaptive, innovative learning that is oriented towards the diverse characteristics of students.

Implementation of Differentiated Learning in High Schools

The implementation of differentiated learning at the senior high school (SMA) level presents more complex challenges than at the elementary level due to the increasingly diverse characteristics of students, including academic abilities, learning styles, motivations, and interests in specific subjects. Teachers are required to conduct diagnostic assessments at the beginning of learning, develop flexible teaching modules, and utilize a variety of learning methods and media to meet the learning needs of all students. Several studies have shown that the implementation of differentiated learning can increase student participation, motivation, critical thinking skills, and learning outcomes. However, its implementation still faces various obstacles, such as limited time in developing learning materials, relatively large student numbers in one class, and teachers' suboptimal understanding of differentiation strategies, resulting in implementation that is not fully aligned with the principles of the Independent Curriculum.

Previous Research

Various previous studies have shown that differentiated learning has a positive impact on the quality of the learning process and outcomes in the implementation of the Independent Curriculum. Research by Marlina (2020) explains that differentiated learning can meet the diverse learning needs of students through adaptation of learning strategies. Another study by Herwina (2021) found that teachers who implement differentiation based on students' learning readiness, interests, and learning profiles are able to increase student engagement during the learning process. Meanwhile, several studies on the implementation of the Independent Curriculum indicate that the success of differentiated learning is still influenced by teacher competence, school support, the availability of learning resources, and the implementation of diagnostic assessments. However, there is still a gap in research that examines in depth how differentiated learning is implemented at the high school level, particularly at SMAN 1 Kutacane. Therefore, this study is important

to provide an overview of implementation practices, supporting factors, obstacles, and efforts made by schools to optimize the implementation of the Independent Curriculum.

Problem Statement

Problem Identification

The Independent Curriculum prioritizes differentiated learning as a key strategy for creating a student-centered learning process. However, implementation in the field has not always been as expected, as some teachers still apply uniform learning methods without considering differences in student readiness, interests, and learning profiles. This situation results in some students not receiving learning services tailored to their needs, thus preventing the objectives of the Independent Curriculum from being optimally achieved.

Research Gap

Various previous studies have discussed the effectiveness of differentiated learning in improving learning outcomes and student engagement. However, most studies focus on elementary education or only measure the effect of differentiated learning on learning outcomes quantitatively. Research examining the comprehensive implementation of differentiated learning at the high school level, particularly in the context of the Independent Curriculum at SMAN 1 Kutacane, is still relatively limited. Therefore, research is needed that can provide an in-depth description of the implementation process, obstacles, supporting factors, and strategies employed by teachers in implementing differentiated learning.

Empirical Conditions

Based on current trends in schools, the implementation of differentiated learning still faces various challenges, such as limited time for teachers to conduct diagnostic assessments, developing learning materials tailored to student characteristics, and managing classes with diverse learning abilities. Furthermore, not all teachers have the same experience and understanding of the concept of differentiation, resulting in variations in its implementation across subjects. These conditions have the potential to impact the effectiveness of the Independent Curriculum in realizing inclusive, adaptive, and student-centered learning.

Urgency of Research

Research on the analysis of the implementation of differentiated learning at SMAN 1 Kutacane is important because it can provide a concrete picture of the implementation of the Independent Curriculum policy at the educational unit level. The results are expected to identify effective learning practices, identify various obstacles faced by teachers, and formulate recommendations that can be used as a basis for improving the learning process. In addition to benefiting the school in improving the quality of the Independent Curriculum implementation, this research is also expected to serve as a reference for future researchers and contribute to the development of studies on differentiated learning at the high school level.

3. Method

This research is a Classroom Action Research (CAR) conducted in two cycles, beginning with a pre-cycle. The pre-cycle is an activity of class observation and orientation, before conducting the research can also provide a diagnostic assessment, to map the needs of students. According to Mulyasa (2009:35), action research is a research activity to obtain truth and practical benefits by carrying out collaborative and participatory actions, involving several parties, namely teachers, principals, and external parties at the same time. This research was conducted at SMAN 1 Kutacane. The method used to collect data from this research

is the observation method, namely observation of learning management for teachers, observation of student activities, documentation methods, and learning tests. Meanwhile, the data analysis method uses descriptive analysis.

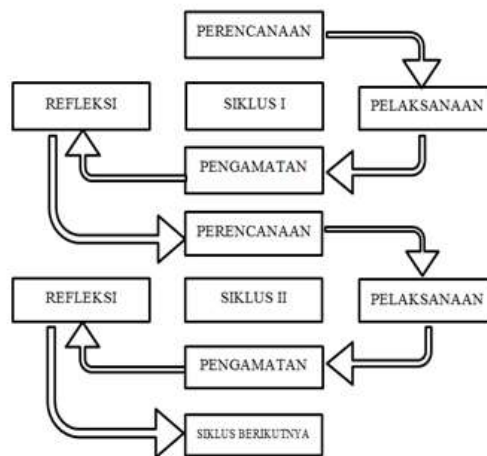


Figure 1. Classroom Action Research Implementation Flow
Source: (Trianto, 2011)

The cycle consists of the following:

a. Planning

The planning stage starts from (1) planning the lesson plan and learning scenario for cycle I for two meetings with a time allocation of 2 x 30 minutes per meeting; (2) Preparing the material to be presented to students; (3) Preparing the material; (4) Preparing differentiated learning that will be used by students to help them understand the material; (5) Preparing evaluation questions related to the material that has been prepared; (6) Preparing assessment instruments.

b. Implementation (Acting)

Learning activities are carried out first to ensure students have a clear understanding of the material. The teacher provides students with an understanding of the history material. Next, the teacher explains differentiated learning, which will be used to improve student learning outcomes in history. After providing a detailed explanation of the material and differentiated learning, the teacher provides related examples. Following a question-and-answer session between the teacher and students, students begin following the teacher's instructions to write conclusions about the material, beginning with selecting the material content.

c. Observation

The observation activities that must be carried out are observing the behavior of students who are participating in differentiated learning activities in history subjects in class X, monitoring discussion activities or group collaboration in preparing differentiated learning, observing each student's understanding in mastering the material and observing students' activities in expressing their ideas in writing.

d. Reflection

Reflection activities that must be carried out by researchers are recording observation results, evaluating observation results, analyzing learning outcomes, processing data from student self-reflection sheets, noting weaknesses to be used as material for compiling the next cycle design until the PTK objectives are achieved. Researchers also hold discussions with the observer teacher to discuss deficiencies, obstacles in learning that need to be improved in the next cycle. The results obtained from observations and evaluation results in cycle I are used as a basis for whether the target

has been met or whether strategy improvements need to be made so that better results are obtained in cycle II.

The four stages above were not only carried out in Cycle I but also in Cycle II. The reflection results from Cycle I served as the basis for the implementation of Cycle II, particularly the planning and action stages. Improved actions were taken in Cycle II to prevent the shortcomings of Cycle I from recurring in Cycle II.

4. Results and Discussion

The Concept of Differentiated Learning

Differentiated learning is a strategy teachers can use to meet the needs of each student. Differentiation is a teaching and learning process in which students learn subject matter based on their abilities, interests, and individual needs, preventing frustration and feelings of failure during the learning process (Tomlinson, 2017). Teachers must understand and recognize that there is more than one way, method, or strategy to learn a subject matter when using differentiated learning. Teachers must organize learning materials, activities, daily assignments completed in class and at home, and final assessments based on students' readiness to learn the subject matter, their interests or preferences in learning, and how to deliver lessons that are appropriate to the learning profiles of the students they teach.

There are four aspects of differentiated learning under the teacher's control: content, process, product, and the classroom learning environment or climate. Teachers can decide how these four elements will be incorporated into classroom learning. Teachers have the ability and opportunity to change the learning environment and climate, as well as the content, process, and product of each class based on the current student profile and learning journey. These four aspects are as follows:

1. Content

Content refers to the material that will be taught by the teacher in class or learned by students in class. There are two ways to create different lesson content in different learning environments: (a) adapting what the teacher will teach or what students will learn based on their level of readiness and interest, and (b) adapting how the content will be taught or learned. This is conveyed by the teacher or obtained by students based on the preferred learning profile (style) of each student.

2. Process

In this section, the term "process" refers to the activities students undertake in class. These activities are meaningful to participants as learning experiences in class, not activities unrelated to the learning process. These activities are not assessed numerically, but rather qualitatively, providing feedback on attitudes, knowledge, and skills that are lacking and need improvement. Students' meaningful activities in class should also be differentiated based on their readiness, interests, and learning styles.

3. Product

A product is the final outcome of learning to demonstrate students' knowledge, skills, and understanding after completing a unit of study or even after covering the subject matter for a semester. Products require more time to complete and require a broader and deeper understanding than students can handle. As a result, products are often completed not only in class but also outside of class. Product implementation can be done individually or in groups. If the product is done in groups between teams, the assessment system is determined based on the contributions of each team member in the process of working on the product.

4. Learning Environment

The learning environment in question encompasses the personal, social, and physical structure of the classroom. The learning environment must also be tailored to students' readiness to learn, their

interests, and their learning profiles to ensure they are highly motivated to learn. For example, teachers can assign seating to students on the classroom bulletin board based on their readiness to learn, their interests, and their learning styles. Students can sit in large or small groups, and they can also work individually or in pairs. Essentially, teachers must create a pleasant learning atmosphere and environment for students so they feel safe, comfortable, and calm while learning because their needs are met.

The objectives of Differentiated Learning include the following:

- a) Facilitating the learning process for all students. Teachers can reflect on and raise awareness of student abilities so that all students can achieve learning goals.
- b) Student motivation and learning outcomes can increase because teachers understand and provide guidance based on the level of difficulty of the material and students obtain learning outcomes that are appropriate to their abilities and the level of difficulty of the material.
- c) A harmonious and harmonious relationship is established between educators and students. This differentiated learning strengthens the relationship between teachers and students, thereby encouraging students to learn.
- d) Helping students to be more confident and independent.
- e) Exploring students' potential and abilities (Marlina, 2019).

Differentiated learning is also defined as a way of recognizing and teaching based on students' different talents and learning styles (Wahyuni, 2022). Teachers provide facilities and adapt to students' needs, as each student has different characteristics and therefore cannot be treated the same. Characteristics of differentiated learning include a learning environment that encourages students to learn, a curriculum with clear learning objectives, ongoing assessment, teachers responding to students' learning needs, and effective classroom management (Siagian et al., 2022).

Teachers in differentiated learning must be able to develop students' learning methods to obtain, manage, use, and communicate the necessary information. Students must be actively involved in the learning, both individually and in groups. Student activity includes the following: (1) doing something to understand the subject matter with full confidence; (2) studying, understanding, and discovering for themselves how to obtain knowledge situations; (3) experiencing for themselves how the tasks given by the teacher are; (4) learning in groups; (5) trying out certain concepts themselves; (6) communicating the results of thoughts, discoveries, and appreciation of values orally or in performance. Teachers play a very important role in the differentiated learning process in directing students' potential, therefore it is important to demonstrate their role in efforts to help students (Herwina, 2021:180).

Analysis of the Application of Differentiated Learning in History Lessons

In Cycle I, students were provided with media through books, modules, learning videos, and worksheets (LKPD) as a guide in learning. Cycle I learning outcomes were seen from 2 learning objectives, with 4 indicators of achievement of these learning objectives. Classwise, students experienced an increase from the pre-cycle. The percentage of completion of learning objectives in classwise in Cycle I was 72.73%, meaning that students were able to meet/adequately achieve the learning objectives.

Table 1. Results of Cycle I

No.	Mark	Number of Students	Percentage	Information
1.	>92	3	9.10%	Very good
2.	84-91	8	24.24%	Good
3.	75-83	13	39.39%	Enough
4.	<75	9	27.27%	Not good

No.	Mark	Number of Students	Percentage	Information
	Amount	33		

Based on Table 1, data obtained shows that student learning outcomes in history subjects in differentiated learning obtained scores where there were 3 students or 9.10% in the very good category, 8 students or 24.24% in the good category, 13 students or 39.39% in the sufficient category and 9 students or 27.27% in the poor category. This indicates that classical learning completion reached 72.73%.

Meanwhile, in cycle II, there was an increase in understanding of the four learning objective indicators, with 90.91% of students having mastered or achieved the learning objectives. In cycle II, students received various learning resources from books, modules, and learning videos. Formative assessments were also provided, with variations including direct and written questions, as well as note sheets, to identify students' strengths and weaknesses in a lesson.

Table 2. Results of Cycle II

No.	Mark	Number of Students	Percentage	Information
1.	>92	9	27.27%	Very good
2.	84-91	13	39.39%	Good
3.	75-83	8	24.24%	Enough
4.	<75	3	9.10%	Not good
	Amount	33		

Based on Table 2, data obtained shows that student learning outcomes in history subjects in differentiated learning obtained scores where there were 9 students or 27.27% in the very good category, 13 students or 39.39% in the good category, 8 students or 24.24% in the sufficient category and 3 students or 9.10% in the poor category. This indicates that classical learning completion reached 90.91%.

The improvement in learning in Cycle II occurred because educators found ways to improve several learning steps, particularly in areas where teaching methods were still poor. The improvements and developments found in Cycle II included the fact that all teachers were considered to be instruments for assessing student success throughout the learning process. All teachers had the option to manage their time during teaching and learning activities, enabling them to perform each activity from start to finish more effectively.

Differentiated learning can maximize student success. This aligns with research by Morgan (2014), which identified differentiated learning as an effort to maximize student success. Differentiated learning is an effective form of learning (Grissom & Bartanen, 2019). Differentiated learning can be said to be more effective because it is tailored to students' learning needs, so students do not need to make many adjustments.

5. Conclusion

Differentiated learning is learning that takes into account individual differences and student needs. Differentiated learning is an effort to adjust the learning process in the classroom to meet the individual learning needs of each student. Furthermore, differentiated learning is an adjustment to the interests, learning profiles, and readiness of students to achieve improved learning outcomes. Through differentiated learning activities, all student learning needs are accommodated according to their interests or learning profiles. In classes that implement differentiated learning, teachers must consider that students have diverse and different learning needs. There are four components of differentiated learning: content, process, product, and learning environment. The results of the study indicate that differentiated learning can improve

learning outcomes in history subjects with learning mastery reaching 72.73% in cycle I and 90.91% in cycle II.

6. Reference

- Andini, D. W. (2016). Differentiated Instruction: Solusi Pembelajaran dalam Keberagaman Siswa di Kelas Inklusif. *Trihayu: Jurnal Pendidikan Ke-SD-an*, 2(3), 340-349.
- Baatar, A., Sandag, O., & Nyamjav, S. (2020). Study of attitudes towards interprofessional education-based on survey from Mongolian National University of Medical Sciences Faculties in Mongolia. *IOSR Journal of Dental and Medical Sciences*, 19, 56-62. <https://doi.org/10.9790/0853-1905025662>
- Grissom, J. A., & Bartanen, B. (2019). Principal effectiveness and principal turnover. *Education Finance and Policy*, 14(3), 355-382.
- Harrison, R. A., Harrison, A., Robinson, C., & Rawlings, B. (2018). The experience of international postgraduate students on a distance-learning programme. *Distance Education*, 39(4), 480-494. <https://doi.org/10.1080/01587919.2018.1520038>
- Herwina, W. (2021). Optimalisasi kebutuhan murid dan hasil belajar dengan pembelajaran berdiferensiasi. *PERSPEKTIF: Ilmu Pendidikan*, 35(2), 175-182.
- Marlina, M. (2019). *Panduan Pelaksanaan Model Pembelajaran Berdiferensiasi di Sekolah Inklusif*. Padang: Universitas Negeri Padang.
- Mulyasa, E. (2009). *Praktik Penelitian Tindakan Kelas*. Bandung: PT. Remaja.
- Morgan, H. (2014). Maximizing Student Success with Differentiated Learning. *The Clearing House: A Journal of Educational Strategies, Issues and Ideas*, 87(1), 34-38.
- Nasution, M. K. (2017). Penggunaan metode pembelajaran dalam peningkatan hasil belajar siswa. *Studia Didaktika*, 11(1), 9-16.
- Santos, J.J.d.S., Bastos, F.H., & Souza, T.O. (2014). Contextual Interference Effect Depends on the Amount of Time Separating Acquisition and Testing. *Advances in Physical Education*, 4, 102-109.
- Schöllhorn, W. I. (2000). Applications of systems dynamic principles to technique and strenght training. *Acta Academiae Olympicae Estoniae*, 8, 67-85.
- Siagian, B. A., Situmorang, S. N., Siburian, R., & Sihombing, A. (2022). Sosialisasi Pembelajaran Berdiferensiasi dalam Program Merdeka Belajar di SMP Gajah Mada Medan. *Indonesia Berdaya*, 3(2), 339-344.
- Singh, J., Steele, K., & Singh, L. (2021). Combining the Best of Online and Face-to Face Learning: Hybrid and Blended Learning Approach for COVID-19, Post Vaccine, & Post-Pandemic World. *Journal of Educational Technology Systems*, 50(2), 140-171. <https://doi.org/10.1177/00472395211047865>
- Tomlinson, Carol A. (2017). *How to differentiate instruction in academically diverse classrooms*. VA: ASCD.
- Trianto. (2011). *Mendesain Model Pembelajaran Inovatif-Progresif: Konsep, Landasan, dan Implementasinya pada Kurikulum Tingkat Satuan Pendidikan (KTSP)*. Jakarta: Kencana.
- Wagner, H. & Müller, E. (2008). The effects of differential and variable training on the quality parameters of a handball throw. *Sports Biomechanics*, 7, 54-71.
- Wahyuni, A. S. (2022). Literature Review: Pendekatan Berdiferensiasi dalam Pembelajaran IPA. *Jurnal Pendidikan MIPA*, 12(2), 118-126.