

Application of the Differentiated Learning Model of Independent Curriculum in Improving Learning Outcomes

Ryya Aulia Assirri

Master of Science Education Study Program, University of Mataram, Mataram, Indonesia
e-mail: ryya.aulia@gmail.com

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Abstract: One important aspect of the Independent Curriculum is differentiated learning, which recognizes individual differences in students and provides learning experiences that are tailored to their needs and interests. This article will analyze the application of differentiated learning models to improve student learning outcomes in essential materials of elementary school science subjects. This research is a quantitative descriptive study, using the method Independent Samples T-Test, consisting of experimental classes and conventional classes to see if there are differences in learning outcomes using a differentiated learning model. Based on the results of the data analysis, a significance value of 0.000 was obtained, because this significance value is much smaller than 0.05, it can be concluded that there is a significant difference between the two groups being compared. These results show that there is a difference in learning outcomes using a differentiated model according to the characteristics of essential material in the Independent Curriculum, namely, the flexibility of learning in the classroom. Differentiated learning is an important strategy in responding to today's educational challenges to meet the unique needs and potential of each student.

Keywords: Essential Material; Differentiated Learning Model; Independent Curriculum.

Introduction

The findings of several studies show that learning loss occurs when students lose previously learned competencies, are unable to complete learning at the class level or experience compound effects because they do not master learning at each level. The phenomenon of learning loss does not only occur in Indonesia. Almost all countries in the world have suffered due to school closures due to the COVID-19 pandemic [1]. Anticipating the impact of the pandemic on learning loss (*learning loss*) and learning gaps (*learning gap*) has actually been carried out by the Ministry of Education and Culture (Kemendikbud/ currently Kemendikbudristek). In August 2020, Kemendikbud issued an emergency curriculum for educational units in special conditions. This emergency curriculum (in special conditions) is essentially a simplification of the national curriculum. The emergency curriculum reduces basic competencies for each subject so that teachers and students can focus on essential competencies and prerequisite competencies for continuing learning at the next level [2]. Teachers are also encouraged to conduct regular diagnostic assessments to diagnose cognitive conditions (students' learning abilities and achievements) and non-cognitive conditions (psychological aspects and emotional conditions of students) due to the impact of distance learning. With this diagnostic assessment, it is hoped that teachers can provide appropriate learning according to the conditions and needs of their students.

Simplification and refinement of the curriculum are certainly necessary as a result of learning loss and learning gap due to the pandemic, the teaching system will change due to the implementation of online learning, and adjustments to current developments and needs. The use of a

more flexible curriculum by refining and adapting to current conditions and needs has proven effective in boosting student learning outcomes [3]. The Independent Curriculum is a new approach in the world of education in Indonesia that aims to provide students with the freedom to determine their own educational paths. The Independent Curriculum requires students to be active in learning, to be able to find concepts and explore information independently with teacher facilitators in the learning process in the classroom [4]. One important aspect of the Independent Curriculum is differentiated learning, which recognizes individual differences in students and provides learning experiences that suit their needs and interests. The Independent Curriculum requires students to be active in learning, to be able to find concepts and explore information independently with teacher facilitators in the learning process in the classroom.

Differentiated learning is an approach that recognizes that each student has different needs and abilities. In differentiated learning, students are given a variety of choices in terms of learning materials, teaching methods, and assessments. The main goal of differentiated learning is to ensure that each student can reach their maximum potential and feel motivated in the learning process. Differentiated learning is not individual learning but classical learning in its activities prioritizing differentiation in class, paying attention to existing differences, and carrying out all activities that support achieving maximum learning goals. By implementing differentiated learning, educators can: a) Accommodate various levels of understanding. Students with different levels of understanding can be given material that is appropriate to their level, so that they do not lag

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behind or feel bored b). Encourage individual interests and talents [5].

Differentiated learning is an effort to adjust the learning process in the classroom to meet the individual learning needs of each student [6]. Differentiated learning (differentiated instruction) is a process or philosophy for effective teaching by providing a variety of ways to understand new information for all students in their diverse classroom community, including ways to obtain content, process, build or reason ideas, develop learning products, and assessment measures so that all students in a classroom with diverse ability backgrounds can learn effectively. Each student will need services and learning that are in accordance with their interests, talents, and potential, in order to develop and achieve optimal learning outcomes. The high level of diversity of students is one of the reasons for the need for differentiated learning. The low level of involvement and desire to learn of students in the classroom occurs because of the mismatch between the teaching methods used and the learning styles and needs of each student [7]. Education should be able to accommodate all these differences, be open to all and provide the needs required by each individual [8].

Government Regulation Number 57 concerning National Education Standards in 2021 states the obligation to develop a diverse curriculum based on the characteristics of the region, educational units, and students. The realization of the development of the Education Unit curriculum is carried out by the government by replacing curriculum-13 with the Merdeka curriculum. The Merdeka Curriculum currently implemented is related to the educator's strategy in delivering learning according to the characteristics of students or student learning styles and student learning interests. The independent learning curriculum emphasizes freedom of learning, recognizes the individuality of each student and provides space for flexibility in learning. In the independent curriculum, differentiated learning is one strategy that teachers can use to meet students' learning needs. Differentiated learning emphasizes that every child has different interests, talents, potential, or learning styles. So, ideally, learning is carried out centred on students while the teacher acts as a guide and facilitator of learning in the classroom. Differentiated learning can be one way used by teachers to teach essential material in the Merdeka curriculum. This article will analyze the application of differentiated learning models to improve student learning outcomes in essential materials of elementary school science subjects.

Research Methods

This study uses a quantitative approach with a descriptive method and a comparative research design, namely comparing learning outcomes using differentiated and conventional learning models [9]. Quantitative research is based on the philosophy of positivism, as a scientific method, because it has met scientific principles in a concrete or empirical, objective, measurable, rational, and systematic manner [10]. Sample selection using simple random sampling, where each individual in the population has an equal chance of being selected [11]. The population selected is all students in class IV at SDN 1 Labuapi. Each class IV A and IV B consists of 38 students; class IV B was selected as a conventional class, and class IV A was selected as an

experimental class. The data obtained are data from formative assessment results between the experimental class that applies a differentiated learning model and the conventional class that applies a conventional learning model on photosynthesis material for grade IV elementary school.

The data obtained was tested with an Independent Samples T-Test. The t-test is a single-sample test that, in principle, tests whether a certain value (given as a comparison) is significantly different from the average of a sample [12]. The specific value here is generally a parameter value to measure a population. If the significance value is <0.05 , then it can be said that there is a difference between the use of differentiated and conventional learning models. Conversely, if the significance value is >0.05 , then it can be said that there is no difference between the use of differentiated and conventional learning models on student learning outcomes.

Results and Discussion

The data obtained are the values of the results of the experimental class formative assessment using the differentiation learning model and the conventional class using the conventional learning model. The experimental class uses product differentiation in its learning process, where the tasks given to students are adjusted to their learning styles. Important components in differentiated learning and must be linked to each other and cannot be separated because they must be included in a learning, namely; 1) content, contains about what material the educator will convey and in accordance with the curriculum, 2) Process, contains about the learning activity process that occurs in the use of media to increase student interest in learning 3) Product, contains a result by students after going through the content and process [13]. There are three learning styles that are grouped by the teacher, namely visual, auditory, and kinesthetic. Each individual student in their learning process is not only in one learning style, but the tendency is only one that stands out from the three. If you are going to use a homogeneous group, then the group division is based on the learning style group, but if you want to use a heterogeneous group basis, then we divide each group into three types of learning styles [14]. The method used by teachers in class is to group students according to their learning style. The groups are divided homogeneously into three groups, namely visual, auditory and kinesthetic, because it will facilitate the preparation of documents and the learning process. Students with visual learning styles are assigned to draw a simple process of photosynthesis, students with auditory learning styles are assigned to explain the process of photosynthesis to their friends in front of the class, and students with kinesthetic learning styles are assigned to conduct a simple experiment on the process of photosynthesis.

The results of the formative assessment from two classes, namely the experimental class and the conventional class, were processed, and based on the test results Independent Samples Test in the variable VAR00002, it can be seen that the significance value of Levene's Test for Equality of Variances of 0.543, which is greater than 0.05. This shows that the variance of the two groups can be considered homogeneous, so that the assumption of equal

variances can be used in the interpretation of the t-test. The results of the t-test show a t value of -19.454 with a degree of freedom (df) of 72 and a significance value (2-tailed) of

0.000. Because this significance value is much smaller than 0.05, it can be concluded that there is a significant difference between the two groups being compared.

Table 1. T-test result

		Levene's Test for Equality of Variances		t-test for Equality of Means		95% Confidence Interval of the Difference				
Variable		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
	Equal variances assumed	.374	.543	-19.454	72	.000	-20.45946	1.05166	-22.56	-18.36
	Equal variances not assumed			-19.454	71.95	.000	-20.45946	1.05166	-22.56	-18.36

The mean difference between the two groups is -20.45946, which means that the mean score of the first group is lower by 20.45946 than the second group. This difference value is also within the 95% confidence interval between -22.55591 to -18.36300, which does not include the number zero, strengthening the conclusion that this difference is statistically significant. Thus, this analysis provides strong evidence that there is a significant difference between the two groups tested on the variable VAR00002. There is a difference in learning outcomes between classes using differentiated learning models and conventional learning.

Learning using a differentiated model is in accordance with the characteristics of essential material in the Merdeka curriculum, namely, the flexibility of learning in the classroom. Ineffective teaching and learning is the inability of teachers to differentiate their teaching in regular and mixed classes [15]. Through differentiated learning, it provides an opportunity for teachers to adjust learning activities to the varying levels of student ability and provides an opportunity for students to get an equal learning experience in the form of a pleasant learning experience. This study is also relevant to several other studies where students in class VD at SD Supriyadi Semarang can achieve better learning outcomes in science subjects by implementing differentiated learning [16]. There is a significant difference between students' science learning outcomes before and after using the differentiated learning strategy model *problem based learning*. Differentiation in content, process, and product has been proven to increase student learning activity, develop creativity, and improve learning outcomes [12]. Differentiation learning strategy is an effort to adjust learning activities carried out in the classroom by meeting the unique learning needs of each individual student [17]. Based on the results of other studies, differentiated learning has been proven to have an effect on improving the learning outcomes of Science 4 MI Al-Falah Beran Ngawi. This is supported by the analysis of the average comparison test at the final stage, which shows that t count (2.433) is greater than t table (2.120) at a significance level of 5%. Therefore, H₀ is rejected, strengthening the conclusion that the differentiated learning model is effective in improving student learning outcomes [10]. The application of differentiated learning can improve students' science learning outcomes, especially on soil and sustainability [18].

Differentiated learning has a positive impact on both students and teachers. Teachers feel happy because they feel

that their students' needs are met, while students also feel happy because differentiated learning is adjusted to their interests, profiles, and learning readiness. Differentiated learning can foster students' learning ethos. Synergy between teachers and students can produce learning outcomes that are in accordance with the dimensions of differentiated learning, such as an interesting and meaningful history learning process, learning experiences that are linked to students' profiles and their learning interests [19].

The application of differentiated learning provides guidelines for teachers to create an inclusive classroom environment, taking into account the unique needs and characteristics of each student [20]. In the context of differentiated learning, the focus is on understanding the concepts or core of the subject matter, so that all students can explore these concepts. Students who have difficulties can understand and use ideas from the concepts taught [21]. While gifted students can expand their understanding and application of these core concepts. In relation to the Merdeka curriculum, one of the main characteristics of the Merdeka Curriculum is a sharp focus on essential materials such as literacy and numeracy. In this approach, the quality of learning is the main priority rather than simply fulfilling a large amount of subject matter. This approach firmly illustrates the determination to ensure that each student truly understands the concepts of literacy and numeracy in depth, forming a strong foundation for their ability to think critically and communicate as well as the ability to face challenges in real life. So that between the use of differentiated learning models according to the characteristics of the Merdeka curriculum, which emphasizes the essential concept of student-centered learning, strengthening the character and competency of literacy, numeracy, and Pancasila student profiles, flexibility in learning according to student needs. The use of differentiated learning models can support learning flexibility because it can adjust to the individual needs of students, pay attention to students' interests and learning styles, focus on competency development, and encourage student independence and responsibility [22].

Conclusion

There are differences in learning outcomes between classes that use differentiated learning models and conventional learning models, whereby using differentiated learning, students' learning outcomes are better. Thus,

differentiated learning is one of the important strategies in responding to today's educational challenges to meet the unique needs and potential of each student. Differentiated learning is the main strategy to realize the principles of the Independent Curriculum. Teachers become facilitators who help each student grow according to their potential and uniqueness.

Author's Contribution

The author realises that there are still many shortcomings in compiling this article, as not all data can be accounted for properly, and input from readers is very meaningful.

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References

- [1] P. Engzell, A. Frey, and M. D. Verhagen, "Learning loss due to school closures during the Covid-19 pandemic," *Proc. Natl. Acad. Sci. USA*, vol. 118, no. 17, 2021. doi: 10.1073/pnas.2022376118.
- [2] Kementerian Pendidikan dan Kebudayaan, *Analisis Survei Cepat Pembelajaran dari Rumah dalam Masa Pencegahan COVID-19*, 2020.
- [3] Paparan Kemdikbudristek, *Kebijakan Kurikulum untuk Pemulihan Pembelajaran Setelah Pandemi*, 2021.
- [4] P. K. Ni'mah, M. Prayito, J. Sulianto, and Darsino, "Analisis Pembelajaran Berdiferensiasi sebagai Strategi Meningkatkan Keaktifan Peserta Didik Kelas IV SDN Plamongsari 02," *Journal on Education*, vol. 6, no. 1, pp. 4383–4390, 2023. doi: 10.31004/joe.v6i1.3579.
- [5] R. Hayati, W. Prima, S. Wulandari, A. P. Yunita, A. Mulyati, and K. Azmi, "Model Pembelajaran STEAM dalam Pembelajaran Matematika Sekolah Dasar," *J. Ilmu Pendidikan*, vol. 5, no. 6, pp. 2591–2603, 2023. doi: 10.31004/edukatif.v5i6.5723.
- [6] C. A. Tomlinson, C. Brighton, H. Hertberg, C. M. Callahan, T. R. Moon, K. Brimijoin, L. A. Conover, and T. Reynolds, "Differentiating instruction in response to student readiness, interest, and learning profile," *J. Educ. Gifted*, vol. 27, no. 2–3, pp. 119–145, 2003. doi: 10.1177/016235320302700203.
- [7] A. Rohmaniyah, M. F. A. Untari, and N. Kurniasari, "Penerapan Pembelajaran Berdiferensiasi dalam Peningkatan Hasil Belajar IPAS Kelas 5 SDN Sawah Besar 01 Semarang," *Journal on Education*, vol. 6, no. 4, pp. 19883–19894, 2024. doi: 10.31004/joe.v6i4.6009.
- [8] D. Iskandar, "Peningkatan Hasil Belajar Siswa pada Materi Report Text Melalui Pembelajaran Berdiferensiasi," *J. Pendidikan dan Pembelajaran Indonesia*, vol. 1, no. 2, pp. 123–140, 2021. doi: 10.53299/jppi.v1i2.48.
- [9] S. Arikunto, *Prosedur Penelitian: Suatu Pendekatan Praktik*. Jakarta: Rineka Cipta, 2006.
- [10] F. A. N. N. Marfuah, D. N. Agnafia, and R. Setyowati, "Pengaruh Pembelajaran Berdiferensiasi terhadap Hasil Belajar Siswa Kelas 4 MI Al Falah," *J. Educ. Res.*, vol. 5, no. 3, pp. 3133–3139, 2024. doi: 10.37985/jer.v5i3.1178.
- [11] P. G. Subhaktiyasa, "Menentukan Populasi dan Sampel: Pendekatan Metodologi Penelitian Kuantitatif dan Kualitatif," *J. Penelitian*, vol. 9, pp. 2721–2731, 2024.
- [12] Y. Nawati Anik, Y. Yuyun, and B. Havifah, "Pengaruh Pembelajaran Berdiferensiasi Model Problem Based Learning Terhadap Hasil Belajar IPA," *J. Ilmiah Pendidikan Dasar*, vol. 8, no. 1, pp. 6167–6180, 2023. doi: 10.23969/jp.v8i1.8880.
- [13] A. Setiyo, "Penerapan Pembelajaran Berdiferensiasi Kolaborasi Dengan Melibatkan Orang Tua dan Masyarakat," *J. Ilmiah Biologi*, vol. 11, pp. 61–78, Apr. 2022. doi: 10.26877/bioma.v11i1.9797.
- [14] N. Wibowo, "Upaya Peningkatan Keaktifan Siswa Melalui Pembelajaran Berdasarkan Gaya Belajar," *ELINVO*, vol. 1, no. 2, pp. 128–139, 2016. doi: 10.21831/elinvo.v1i2.10621.
- [15] T. E. Stavrou and M. Koutselini, "Differentiation of Teaching and Learning: The Teachers' Perspective," *Univ. J. Educ. Res.*, vol. 4, no. 11, pp. 2581–2588, 2016. doi: 10.13189/ujer.2016.041111.
- [16] A. C. Nadwah and M. Prayoti, "Kefektifan Implementasi Pembelajaran Berdiferensiasi pada Mata Pelajaran IPAS Kelas V," *Journal on Education*, vol. 6, no. 3, pp. 16943–16949, 2024. doi: 10.31004/joe.v6i2.
- [17] I. Farid, R. Yulianti, A. Hasan, and T. Hilaiyah, "Strategi Pembelajaran Diferensiasi di Sekolah Dasar," *J. Pendidikan dan Konseling (JPDK)*, vol. 4, no. 6, pp. 11177–11182, 2022. doi: 10.19184/se.v6i1.40019.
- [18] Suwartiningsih, "Penerapan Pembelajaran Berdiferensiasi pada Materi IPA Pokok Bahasan Tanah dan Keberlangsungan Kehidupan," *J. Pendidikan dan Pembelajaran Indonesia*, vol. 1, no. 2, pp. 2797–2880, 2021. doi: 10.53299/jppi.v1i2.39.
- [19] E. Mirzachaerulsyah, "Analisis Pelaksanaan Pembelajaran Berdiferensiasi pada Mata Pelajaran Sejarah," *J. Ilmiah Wahana Pendidikan*, vol. 9, no. 2, pp. 1–6, 2023. doi: 10.5281/zenodo.7560689.
- [20] Soviyani, I. L. Barokah, R. D. Putri, and A. Wahyudi, "Analisis Pembelajaran Berdiferensiasi dalam Kurikulum Merdeka," *J. Pendidikan Dasar: Tunas Nusantara*, vol. 6, no. 2, pp. 744–753, 2024. doi: 10.34001/jtn.v6i2.7126.
- [21] L. K. Sutrisno and A. K. Hernawan, "Penerapan Pembelajaran Berdiferensiasi sebagai Solusi Kurangnya Keaktifan Peserta Didik," *J. Elementary Education*, vol. 6, no. 1, pp. 111–121, 2023. doi: 10.22460/collase.v1i1.16192.
- [22] H. Khristianim, S. Elisabeth, N. Purnamasari, P. Mariati, Anggraeni, and S. Yusri, *Model Pengembangan Pembelajaran Berdiferensiasi (Differentiated Instruction)*. Jakarta: Pusat Kurikulum dan Pembelajaran, 2021.