TERAMPIL
Jurnal Pendidikan Dan Pembelajaran Dasar

p-ISSN 2355-1925
e-ISSN 2580-8915

Articles

Differentiated Learning Strategies to Improve Science Literacy in Elementary Schools

Septika Laily Anti[1]*, Rina Rahmi[2] , Muhammad Nur Ikhwan[3]

[1] STIT Tanggamus, Jl. Break Maeyer Landbaw Pekon Kutodalom, Kecataman Gisting, Kabupaten Tanggamus, Lampung, 35378, Indonesia.
[2] STAIN Teungku Dirundeng Meulaboh, Jl. Alue Peunyareng, Gunong Kleng, Kecamatan Meureubo, Kabupaten Aceh Barat, Aceh, 23681, Indonesia. Institut Agama Islam Ma'arif NU Metro. Jalan RA. Kartini, Puwosari, Metro 34111, Indonesia.
[3] Universitas Islam Negeri Salatiga, Jl. Lingkar Salatiga, Kecamatan Siforejo, Salatiga, 50716, Indonesia.

* *Corresponding Author*. E-mail: septika28@gmail.com

Article Info

Article History

Received : 02-02-2024
Revised : 05-04-2024
Accepted : 27-06-2024

Keywords:

Differentiated Learning,
Scientific Literacy

ABSTRACT

The aim of the research is to describe differentiated learning strategies to improve scientific literacy in elementary schools. The research method used is qualitative with a literature review *approach*. The object of this research is differentiated learning strategies and scientific literacy. Data is collected through documents or information searched on *Google Scholar* such as books, journals, articles and related documents. Data analysis used the *Preferred Reporting Items for Systematic Review and MetaAnalysis* (PRISMA) method. The results of the research are that differentiated learning can improve students' scientific literacy, especially in terms of understanding concepts and critical thinking skills. However, implementing this strategy faces several challenges, such as time constraints, the need for adequate resources, and adapting to diverse student needs. However, with the right support and careful planning, differentiated learning has great potential to improve the quality of science education. Differentiated learning can be applied at the early childhood education levels, elementary school,

middle school, up to high school, where from the research that has been conducted in the 2017-2023 period, no one has used differentiated learning to increase scientific literacy, so further research is needed to discuss strategies, models or differentiated learning. towards scientific literacy. Previous research has used reading literacy but has not used scientific literacy, especially at the elementary school (SD) level. This research contributes to the educational literature by offering practical insights into the application of differentiated learning and its implications for students' scientific literacy.

1. Introduction

The use of relevant strategies in learning will have a very effective influence on the intelligence possessed by each student (Suhendro, 2020). Learning strategies are the methods that a teacher will choose and use to convey learning material, so that it will make it easier for students to receive and understand the learning material so that ultimately they can master the learning objectives at the end of the learning activity (Hidayat et al., 2020). The learning carried out currently is student-centered. One form of student-centered learning can be done using differentiated learning. Differentiated learning is learning that pays attention to students' characteristics and their potential by paying attention to students' individual differences (Nurcahyono & Putra, 2023). Every individual has their own uniqueness so differentiated learning is very important to apply in the classroom. As teachers we cannot generalize students to achieve one competency, but we can optimize the potential within students to the maximum through the learning process (Laumarang et al., 2023). Through differentiated learning, all students' learning needs can be facilitated according to the students' interests and learning needs. Differentiated learning can also provide ample space for students to demonstrate what they have learned, thereby indirectly encouraging student creativity (Herwina, 2021).

According to Suwartiningsih, (2021) Differentiation learning is mixing all the differences to get information, create ideas and demonstrate what has been learned. In other words, differentiated learning is creating a class with a diversity of students' characters, interests and needs by providing opportunities to process ideas and improve the results of each student, so that students will be able to learn more effectively (Rompis, 2023). Differentiated learning applied in scientific literacy allows teachers to adapt teaching materials and methods based on individual student needs and abilities, so that each student can develop a deeper scientific understanding

according to their pace and learning style. With this approach, scientific literacy becomes more accessible and relevant for all students, encouraging active participation and a stronger understanding of scientific concepts.

Scientific literacy is a skill that includes knowledge (vocabulary, facts and concepts), processing skills (skilled and intellectual), dispositions (behavior and attitudes), and their relationship to facts in the environment (Fadilah et al., 2020). Scientific literacy skills are important for students in analyzing problems and connecting these problems with various scientific facts (Astuti et al., 2023). The results of PISA (*Program for International Student Assessment*) data in 2012 stated that the majority of students aged 15 years did not yet have basic literacy in reading, mathematics and science (Arista & Mahmudi, 2020). Current research in Indonesia shows that the quality of student literacy is still low, according to the results of PISA in 2018, which was participated in by 79 countries. It shows that Indonesia is only ranked 74th in reading literacy ability, 73rd in numeracy/mathematics ability and 71st in literacy ability. science (Agung et al., 2022). This shows that the majority of elementary school students in Indonesia have poor abilities, especially in the field of science.

The reality in schools shows that there are still students who have difficulty providing critical answers to problems given by the teacher (Monika et al., 2022). Students' scientific literacy abilities are still low with a percentage of approximately 50% (Utami et al., 2022). The background to the low literacy skills of students is due to students' learning activities being less conducive to receiving learning in class. There are still many students who do not pay attention to teachers when teaching and only focus on their own activities such as joking around and are less involved in group discussions (Parnata et al., 2023). Low scientific literacy causes some students to have difficulty understanding the content of learning material which has an impact on student learning outcomes (M. S. A. Dewi & Lestari, 2020). So learning strategies are needed that can increase students' scientific literacy. Through differentiated learning strategies, each student can be given the opportunity to learn according to their style and abilities, while scientific literacy helps them develop a deep understanding of scientific concepts and critical thinking skills. By integrating the two, we can create a learning environment that encourages exploration, discovery, and deeper understanding, so that every student can reach his or her maximum potential in science learning.

Previously there was research that had been carried out regarding differentiated learning and scientific literacy, namely (Arifin & Wulandari, 2024; Fitriyana et al., 2024; Marisa et al., 2024; Nawati et al., 2023; Nurdyana, 2024; Pratama, 2022). Of the several studies that have been conducted, they only discuss differentiated learning in improving reading literacy, literacy and numeracy skills, differentiated learning using the *Problem Based Learning model*, differentiated learning that integrates the Al-Qur'an and social emotional competence, as well as literacy skills combined with methods. *read aloud* in differentiated learning. Previous research discussions have not discussed differentiated learning to increase scientific literacy

in elementary schools. So the aim of the research is to describe differentiated learning strategies to increase scientific literacy in elementary schools.

2. Method

This research uses qualitative methods with a literature review *approach* . Literature study is related to theoretical studies and other references related to values, culture and norms that develop in the social situation being studied. Apart from that, literature study is very important in conducting research because it cannot be separated from scientific literature (Sari & Asmendri, 2020). The object of this research is differentiated learning. Data is collected through documents or information such as books, journals, articles and related documents. Data obtained in research journals is limited to 2017-2023 using *Google Scholar* using the keyword "differentiated learning". Because this research will examine differentiation learning, the articles obtained were *identified*, *screened* and *eligible* so that 10 articles were obtained, where the keyword "differentiated learning" was obtained. Data analysis used the *Preferred Reporting Items for Systematic Review and MetaAnalysis* (PRISMA) method. The PRISMA steps are *identification*, namely identifying the literature that will be used as a sample; *screening*, namely carrying out selection according to the aspects being measured; *filter data* as an initial assessment based on correlation variables and parameters to be extracted; *eligibility* is an assessment of the quality of the literature; *included* , namely compiling a meta-analytic data set and conducting a literature review of selected articles. This *Literature Review* was synthesized using a narrative method by grouping similar extracted data according to the results measured to answer the research objectives.

3. Results and Discussion

Journals are reviewed, collected and a summary is made consisting of the name, year of publication of the journal, research title, research method, level of education, dependent variable measured and findings. Implementing the PRISMA method in selecting appropriate journal articles, 10 journal articles were selected which were presented in table form to make the interpretation process easier. The following are the results of article identification from the keyword "differentiated learning". After the journal identification stage has been carried out, the data is filtered and the resulting identification of articles that meet the *eligibility criteria* is then *included*, so that a summary of the article data is obtained which is presented in the following table:

Table 1. Literature Review Analysis of the Keyword "Differentiated Learning"

No	Researcher/Year	Level	Research methods	Dependent Variable measured	Findings
1.	Nur Cahyati Ngaisah, Munawarah, Reza Aulia, 2023	presch ool	Literature review	Development of Differentiated Learning	Differentiated learning in early childhood education includes three important elements: content, process and product, which are tailored to the child's interests and learning profile.
2.	Meria Ultra Gusteti, 2022	Junior High School	Literature Review	Mathematics Learning Outcomes	The differentiated approach can be integrated with several learning models such as *Problem Based Learning* (PBL), *Project Based Learning* (PjBL) and other models that are adapted to student learning styles; differentiated learning is more interesting and can improve student learning outcomes;
3.	Adi Pratama, 2022	elemen tary school	Descriptive	Students' Reading Comprehension Literacy Ability	Differentiated learning strategies can improve the literacy and reading comprehension skills of grade 5 elementary school students.
4.	Linda Wardhatul Hasanah, Hernawi Silalahi, Novianto Bhakti Putra Utama, 2023	elemen tary school	PTK	Student Learning Achievements in Flat-Rounded Roving Material	The application of differentiated learning in mathematics learning material around flat shapes for class IV SD Negeri 129 Rejang Lebong can increase student activity and learning outcomes.

5.	Yuli Mulyawati, MS Zulela, Edwita, 2022	elementary school	Literature review	Student Potential	Teachers must be able to guide students so that they are able to develop according to their characteristics and the potential that the students have, this is closely related to differentiated learning. One of the values and roles of teachers is to create learning that supports students, namely learning that liberates students' thinking and potential. Differentiation can be applied to learning content, processes and products.
6.	Devi Kurnia Fitria, 2022	Junior High School	Literature review	Student Science Learning Outcomes	The view of progressivism, especially from the perspective of John Dewey, is very relevant in the context of differentiated learning. Progressivism emphasizes the importance of student-centered education, where learning continues to develop according to individual needs and potential. Differentiated learning, which considers students' learning readiness, profile, interests and talents, is in line with the principles of progressivism. Although this concept is not new in education, its application in science

					learning in secondary schools is still limited, especially in terms of measuring learning outcomes.
7.	Saniyatul Hidayah, Yudha Irhasyuarna, Maya Istyadji, Fahmi, 2023	Junior High School	Pre-experimental experimental type one group pretest posttest design method	Student Science Literacy	The application of Differentiated Instruction in science learning oriented towards the Merdeka Belajar program can improve students' scientific literacy skills.
8.	Virlya Citra Dewi, Nur Kuswantu, Bambang Prijono, 2023	Senior High School	PTK	Science Literacy Abilities and Student Activities	The application of problem-based learning with a differentiated learning approach can improve students' scientific literacy skills and activities
9.	Wahyu Nurhidayat, Heni Rusnayari, Ai Anisah, Puri Irna Iriyanti, 2023	Senior High School	PTK	Learning outcomes	An inquiry learning model based on differentiation learning strategies can improve student learning outcomes.
10.	Risma Rahmawati	elementary school	Literature review	Student Learning Outcomes	Implementation of differentiated learning in the independent curriculum can be done through three main strategies: content, process and product differentiation. Even though this strategy can be implemented, teachers still face various difficulties, such as limited time, preparing different activities for each student, unpreparedness in

	making learning plans and modules, and lack of teacher readiness in implementing differentiated learning. These difficulties show that although there are strategies that can be used, implementing differentiated learning remains a challenge for teachers.

Differentiated learning has become an approach that is increasingly being applied in education, especially in an effort to meet the unique needs of each student in heterogeneous classrooms. Based on the analysis of various studies listed in the literature review table, it appears that this approach consistently shows positive results in improving students' learning outcomes and literacy skills. Literature review by Ngaisah & Aulia, (2023) emphasizes that differentiated education is very important in dealing with student diversity in terms of interests, learning readiness and learning profiles. This research shows that by accommodating these individual differences, student learning outcomes can be improved significantly. This is in line with the findings Gusteti & Neviyarni, (2022) which reveals that differentiated learning, especially in the context of mathematics education, can improve students' understanding and their abilities in the material being taught.

Furthermore, research conducted by Pratama, (2022) shows that differentiated strategies in improving reading literacy skills are also very effective. This research focuses on elementary school students and finds that this approach not only improves reading comprehension skills but also has a positive influence on student engagement in the learning process. This finding is strengthened by other research conducted by Hasanah et al., (2023), where the application of a differentiated learning model on plane material succeeded in increasing student activity and learning outcomes significantly.

Other research from Mulyawati et al., (2022) shows that by understanding and adapting learning according to student potential, teachers can be more effective in developing various aspects of student intelligence, be it cognitive, affective or psychomotor. Meanwhile, Fitra, (2022) the study shows that differentiation-based science learning also has a significant impact on student learning outcomes. This approach allows students to learn in a way that best suits their needs and pace, ultimately improving understanding and acceptance of course material.

Further involved literature review Hidayah et al., (2023) shows that students' scientific literacy can be significantly improved through the implementation of a differentiated approach. This research highlights the importance of developing

critical and analytical skills through learning methods tailored to students' individual needs. This is also supported by findings from V. C. Dewi et al., (2023) which shows that this approach increases students' overall scientific literacy activities and abilities.

Besides that, Nurhidayat et al., (2023) in their research found that student learning outcomes improved when learning methods were tailored to their individual needs and preferences. This approach suggests that when teachers respond proactively to differences in students' learning rates, interests, and learning styles, better results can be achieved. Finally, research by Rahmawati, (2023) shows that an implementation of differentiated learning in the context of the Independent Curriculum, with a focus on how teachers overcome the challenges that arise in its implementation. There are three main strategies that can be used in differentiated learning, namely content, process and product differentiation. Although these strategies offer a more personalized approach to teaching, many teachers face obstacles in implementing them. Some of the difficulties identified include limited time to prepare materials that suit individual student needs, lack of skills and knowledge in developing different learning plans and modules, as well as challenges in adapting teaching methods to different levels of student ability. The success of differentiated learning does not only depend on the strategy chosen, but also on the teacher's readiness and competence in implementing it. Therefore, more intensive training and support for teachers is needed to increase the effectiveness of differentiated learning in the context of the Merdeka Curriculum.

Overall, the analysis of this literature review underscores the importance of differentiated learning as an effective pedagogical strategy for improving learning outcomes and student engagement. This approach not only recognizes and respects diversity in the classroom, but also encourages the development of students' potential to the maximum. Learning tailored to individual needs, interests and learning styles has been proven to not only improve academic outcomes but also build deeper skills such as critical, analytical and reflective thinking. Therefore, implementing differentiated learning can be considered a strategic step in improving the quality of education and ensuring that every student can reach their maximum potential in an inclusive and supportive learning environment.

A teacher's ability to choose learning models, strategies and methods is very important for differentiated learning, which increases students' motivation to participate in the learning process (Kurniasih & Priyanti, 2023). Therefore, in an effort to improve the quality of learning in the classroom, the teacher's role is very important in determining the success of a lesson (Prijanto & De Kock, 2021). To maximize learning outcomes, teachers who are responsive to students' learning needs will differentiate the learning process by adding, expanding and adjusting time. There are four (4) learning components which are differentiated according to Wahyudi et al., (2023), namely: content, process, product, and learning environment. The effectiveness of implementing differentiated learning can be seen from several previous studies, both from increased learning outcomes and students' motivation and ability to think critically in the learning process.

By using differentiated learning, teachers can better meet the needs and expectations of their students. According to students' interests or learning needs, differentiated learning can enable all their learning demands. Indirectly, this will encourage increased student creativity. Differentiated learning can also give students plenty of room to demonstrate what they have learned. In addition, because creativity will continue to develop, differentiated learning is an approach that is highly recommended to be applied in learning to make it easier to achieve learning goals (Lisnawati et al., 2023).

In implementing differentiated learning, a supportive classroom climate is needed where everyone in the class is welcomed and feels accepted, everyone respects each other, students feel as safe as possible in learning, there is hope for student mastery to grow, teachers teach to achieve student success, there is justice felt by students. In real form, teachers and students collaborate with each other for mutual success (Amin et al., 2023) and benefits such as increased student motivation when division is implemented effectively in the classroom (Munthe & Naibaho, 2019).

Differentiated learning will be more effective if it is embedded in a broader context (Yunita et al., 2024). Differentiated learning can not only be applied in independent curriculum learning, but can be applied across various curriculums. Differentiated learning departs from Ki Hajar Dewantara's philosophy which states that differentiated learning is in favor of students because it takes into account students' talents, interests, readiness to learn and learning type (Amalia et al., 2024). This is in accordance with research conducted by Rafiska & Susanti, (2023) those who state that differentiated learning is student-centered. So that in the independent curriculum the teaching modules prepared by teachers should be based on differentiated learning. This is in line with research conducted by Al-Shaboul et al., (2021) The importance of applying student-centered learning approaches, such as differentiated learning, to this research reminds teachers that they have the opportunity to continually develop and change their teaching methods, which in turn will prepare future generations to achieve future excellence. In line with research conducted Palieraki & Koutrouba, (2021) in Greece which states that differentiated learning is effective in improving the teaching carried out by teachers.

In previous research, differentiated learning can be applied at the early childhood education levels, elementary school, middle school, up to high school, where from the research that has been conducted from 2017-2023, no one has used differentiated learning to increase scientific literacy, so further research is needed to discuss strategies and models, or differentiated learning towards scientific literacy. Previous research has used reading literacy but has not used scientific literacy, especially at the elementary school (SD) level. This research has limitations, especially related to the use of the literature review method and the implementation of the PRISMA method in selecting journal articles. Although this research has succeeded in identifying and analyzing 10 journal articles related to differentiated learning, the main limitation lies in the limited number of articles reviewed, which

may not fully represent all findings in the wider literature. In addition, the literature study method used may not provide a completely comprehensive picture of the practical challenges and implications of implementing differentiated learning in various educational contexts. Another limitation is the lack of direct empirical data, so the conclusions drawn are more theoretical in nature and need to be further validated through field research. The results of this research also show that although differentiated learning strategies are recognized as being able to improve student learning outcomes, their implementation still faces significant obstacles, such as limited time, lack of teacher skills, and school readiness to support this method. Therefore, the results of this research do not fully describe the success of differentiated learning in the field, considering the existence of various external factors that have not been fully explored.

4. Conclusions and Suggestions

Differentiated learning is an effective approach to increasing scientific literacy in elementary schools. This approach pays attention to individual student differences, such as interests, learning styles and potential, so that it can increase students' understanding and involvement in learning. Differentiated learning can be applied at the early childhood education levels, elementary school, middle school, up to high school, where from the research that has been conducted in the 2017-2023 period, no one has used differentiated learning to increase scientific literacy, so further research is needed to discuss strategies, models or differentiated learning. towards scientific literacy. Previous research has used reading literacy but has not used scientific literacy, especially at the elementary school (SD) level. The literature study conducted shows that differentiated learning strategies are able to have a positive impact on learning outcomes, especially in improving students' scientific literacy abilities. Although implementing this approach has challenges, such as limited time and teacher readiness, differentiated learning remains a highly recommended strategy for creating an inclusive learning environment and supporting the development of each student's maximum potential. Future researchers are advised to further explore the practical implementation of differentiated learning in the classroom, especially in the context of limited resources and time. Future research could include the development of learning modules or tools specifically designed to improve scientific literacy through a differentiated approach, providing practical guidance for teachers in adapting learning materials according to student needs. In addition, testing the effectiveness of these strategies in various educational contexts, such as in schools with different student characteristics, is essential to ensure their flexibility and effectiveness. Quantitative research with a controlled trial approach is also recommended to measure the specific impact of differentiated learning on students' scientific literacy. Analysis of the capabilities and challenges faced by teachers in implementing differentiated learning can also be an important focus, including how training and support can be improved. In the digital era, the integration

of educational technology with differentiated learning, such as through adaptive platforms, could be an interesting area of research. In addition, long-term research on the effects of differentiated learning on students' critical thinking skills and academic outcomes is also needed. Finally, interdisciplinary collaboration between education, psychology and technology is expected to produce a more comprehensive and innovative approach to differentiated learning.

5. Author Contributions

SLA Prepare research concepts and designs, collect data, and present tables. RR and MNI Prepared discussion, conclusions and abstracts.

6. Bibliography

Agung, I. D. G., Suardana, I. N., & Rapi, N. K. (2022). E-modul IPA dengan model STEM-PjBL berorientasi pendidikan karakter untuk meningkatkan hasil belajar siswa. *Jurnal Ilmiah Pendidikan Dan Pembelajaran*, *6*(1), 120–133. https://doi.org/10.23887/jipp.v6i1.42657

Al-Shaboul, Y., Al-Azaizeh, M., & Al-Dosari, N. (2021). Differentiated Instruction between Application and Constraints: Teachers' Perspective. *European Journal of Educational Research*, *10*(1), 127–143. https://doi.org/10.12973/eu-jer.10.1.127

Amalia, S., Safrida, S., & Ulva, S. M. (2024). Differentiated learning integrated with social emotional awareness and digital learning media in improving the students motivation and learning outcomes. *Jurnal Penelitian Pendidikan IPA*, *10*(1), 239–245. https://doi.org/10.29303/jppipa.v10i1.5354

Amin, Y. F., Siswanto, J., Untari, M., & Kanitri, N. (2023). Implementasi Pembelajaran Berdiferensiasi Aspek Proses Dalam Meningkatkan Hasil Belajar Siswa Kelas 1 Sdn Pedurungan Kidul 01. *Pendas: Jurnal Ilmiah Pendidikan Dasar*, *8*(1), 653–664. https://doi.org/10.23969/jp.v8i1.7362

Arifin, Z., & Wulandari, D. (2024). Kajian Literatur: Pembelajaran Berdiferensiasi dalam Pembelajaran IPA di Madrasah. *LENSA (Lentera Sains): Jurnal Pendidikan IPA*, *14*(1), 29–36. https://doi.org/10.24929/lensa.v14i1.409

Arista, E. D. W., & Mahmudi, A. (2020). Kemampuan berpikir kreatif matematis dalam penyelesaian soal open-ended jenis PISA berdasarkan level sekolah. *Pythagoras*, *15*(1). http://dx.doi.org/10.21831/pg.v15i1.34606

Astuti, W., Sulastri, S., Syukri, M., & Halim, A. (2023). Implementasi pendekatan science, technology, engineering, and mathematics untuk meningkatkan kemampuan literasi sains dan kreativitas siswa. *Jurnal Pendidikan Sains Indonesia (Indonesian Journal of Science Education)*, *11*(1), 25–39. https://doi.org/10.24815/jpsi.v11i1.26646

Dewi, M. S. A., & Lestari, N. A. P. (2020). E-modul interaktif berbasis proyek terhadap hasil belajar siswa. *Jurnal Ilmiah Pendidikan Dan Pembelajaran*, *4*(3), 433–441. https://doi.org/10.23887/jipp.v4i3.28035

Dewi, V. C., Kuswanti, N., & Prijono, B. (2023). Implementation of Problem-Based Learning Model based on Differentiated Learning to Improve Science Literacy Skills and Student Activities. *Jurnal Eksakta Pendidikan (JEP)*, *7*(2), 225–238. https://doi.org/10.24036/jep/vol7-iss2/772

Fadilah, F., Isti, S., Amarta, T. W. D., & adi Prabowo, C. (2020). Analisis kemampuan literasi sains siswa sma pada pembelajaran biologi menggunakan noslit. *Jurnal Bioeduin*, *10*(1), 27–34. https://doi.org/10.15575/bioeduin.v10i1.8141

Fitra, D. K. (2022). Pembelajaran berdiferensiasi dalam perspektif progresivisme pada mata pelajaran IPA. *Jurnal Filsafat Indonesia*, *5*(3), 250–258. https://doi.org/10.23887/jfi.v5i3.41249

Fitriyana, I., Juhana, J., & Nirmala, S. D. (2024). Pengaruh Strategi Pembelajaran Berdiferensiasi Terhadap Literasi dan Numerasi Siswa Sekolah Dasar. *Jurnal Studi Guru Dan Pembelajaran*, *7*(1), 439–453. https://doi.org/10.30605/jsgp.7.1.2024.4275

Gusteti, M. U., & Neviyarni, N. (2022). Pembelajaran berdiferensiasi pada pembelajaran matematika di kurikulum merdeka. *Jurnal Lebesgue: Jurnal Ilmiah Pendidikan Matematika, Matematika Dan Statistika*, *3*(3), 636–646. https://doi.org/10.46306/lb.v3i3.180

Hasanah, L. W., Silalahi, H., & Utama, N. B. P. (2023). Strategi pembelajaran berdiferensiasi pada pembelajaran matematika materi keliling bangun datar kelas iv sekolah dasar. *Jurnal Didaktika Pendidikan Dasar*, *7*(1), 237–258. https://doi.org/10.26811/didaktika.v7i1.1064

Herwina, W. (2021). Optimalisasi kebutuhan murid dan hasil belajar dengan pembelajaran berdiferensiasi. *Perspektif Ilmu Pendidikan*, *35*(2), 175–182.

Hidayah, S., Irhasyuarna, Y., Istyadji, M., & Fahmi, F. (2023). Implementation of Merdeka Belajar Differentiated Instruction in Science Learning to Improve Student's Science Literacy. *Jurnal Penelitian Pendidikan IPA*, *9*(11), 9171–9178. https://doi.org/10.29303/jppipa.v9i11.3637

Hidayat, A., Sa'diyah, M., & Lisnawati, S. (2020). Metode pembelajaran aktif dan kreatif pada madrasah diniyah takmiliyah di kota bogor. *Edukasi Islami: Jurnal Pendidikan Islam*, *9*(01), 71–86. https://doi.org/10.30868/ei.v9i01.639

Kurniasih, E. S., & Priyanti, N. (2023). Pengaruh Pendekatan Pembelajaran Diferensiasi Terhadap Kemampuan Literasi Baca, Tulis Dan Numerasi Pada Anak Usia Dini. *Jurnal Ilmiah Potensia*, *8*(2), 398–498. https://doi.org/10.33369/jip.8.2.398-498

Laumarang, S. N., Odja, A. H., & Supartin, S. (2023). Pengaruh Penerapan Pembelajaran Berdiferensiasi Menggunakan Model Pembelajaran Discovery Learning Terhadap Hasil Belajar Siswa pada Konsep Pemanasan Global.

Jurnal Tadris IPA Indonesia, *3*(3), 315–326. https://doi.org/10.21154/jtii.v3i3.2337

Lisnawati, L., Kuntari, S., & Hardiansyah, M. A. (2023). Peran Guru dalam Penerapan Pembelajaran Berdiferensiasi untuk Menumbuhkan Minat Belajar Siswa pada Mata Pelajaran Sosiologi. *As-Sabiqun*, *5*(6), 1677–1693. https://doi.org/10.36088/assabiqun.v5i6.4086

Marisa, L., Raharjo, T. J., & Wardani, S. (2024). Development of Science Teaching Modules Based on Differentiated Learning Integrated Social Emotional Competence to Enhance Learning Independence and Scientific Literacy in Elementary Schools. *ELSE (Elementary School Education Journal): Jurnal Pendidikan Dan Pembelajaran Sekolah Dasar*, *8*(1). https://doi.org/10.30651/else.v8i1.21950

Monika, T. S., Julia, J., & Nugraha, D. (2022). Peran dan Problematika Guru Mengembangkan Keterampilan 4C Abad 21 Masa Pandemi di Sekolah Dasar. *Jurnal Cakrawala Pendas*, *8*(3), 884–897. https://doi.org/10.31949/jcp.v8i3.2672

Mulyawati, Y., Zulela, M. S., & Edwita, E. (2022). Differentiation learning to improve students potential in elementary school. *Pedagonal: Jurnal Ilmiah Pendidikan*, *6*(1), 68–78. https://doi.org/10.55215/pedagonal.v6i1.4485

Munthe, A. P., & Naibaho, H. P. (2019). Manfaat dan Kendala Penerapan Tutor Sebaya untuk Siswa Kelas IV Sekolah Dasar Lentera Harapan Mamit. *Scholaria: Jurnal Pendidikan Dan Kebudayaan*, *9*(2), 138–147. https://doi.org/10.24246/j.js.2019.v9.i2.p138-147

Nawati, A., Yulia, Y., & Khosiyono, B. H. C. (2023). Pengaruh pembelajaran berdiferensiasi model problem based learning terhadap hasil belajar IPA pada siswa sekolah dasar. *Pendas: Jurnal Ilmiah Pendidikan Dasar*, *8*(1), 6167–6180. https://doi.org/10.23969/jp.v8i1.8880

Ngaisah, N. C., & Aulia, R. (2023). Perkembangan pembelajaran berdiferensiasi dalam kurikulum merdeka pada pendidikan anak usia dini. *Bunayya: Jurnal Pendidikan Anak*, *9*(1), 1–25. http://dx.doi.org/10.22373/bunayya.v9i1.16890

Nurcahyono, N. A., & Putra, J. D. (2023). Penerapan Differentiated Instruction Terhadap Kemampuan Siswa dalam Belajar Matematika. *Journal of Authentic Research on Mathematics Education (JARME)*, *5*(2), 234–242. https://doi.org/10.37058/jarme.v5i2.5818

Nurdyana, Y. B. (2024). Read Aloud pada Pembelajaran Berdiferensiasi untuk Meningkatkan Literasi Siswa Lambat Belajar. *Jurnal Didaktika Pendidikan Dasar*, *8*(2), 559–584. https://doi.org/10.26811/didaktika.v8i2.1259

Nurhidayat, W., Rusnayati, H., Anisah, A., & Iriyanti, P. I. (2023). Classroom Action Research: Efforts to Improve Learning Outcomes by Applying Differentiated Learning-Based Inquiry Learning Models. *Journal of Teaching and Learning Physics*, *8*(2), 99–110. https://doi.org/10.15575/jotalp.v8i2.26540

Palieraki, S., & Koutrouba, K. (2021). Differentiated Instruction in Information and Communications Technology Teaching and Effective Learning in Primary Education. *European Journal of Educational Research*, *10*(3), 1487–1503. https://doi.org/10.12973/eu-jer.10.3.1487

Parnata, I., Maharani, L. P., Hidayat, L., Pramudia, T. E., & Rofiki, I. (2023). Profil Pengajaran Guru Matematika Berdasarkan Kemampuan Pengelolaan Kelas di Sekolah Menengah Pertama. *Suska Journal of Mathematics Education*, *9*(1), 1–14. http://dx.doi.org/10.24014/sjme.v9i1.19986

Pratama, A. (2022). Strategi Pembelajaran Berdiferensiasi Meningkatkan Kemampuan Literasi Membaca Pemahaman Siswa. *Jurnal Didaktika Pendidikan Dasar*, *6*(2), 605–626. https://doi.org/10.26811/didaktika.v6i2.545

Prijanto, J. H., & De Kock, F. (2021). Peran guru dalam upaya meningkatkan keaktifan siswa dengan menerapkan metode tanya jawab pada pembelajaran online. *Scholaria: Jurnal Pendidikan Dan Kebudayaan*, *11*(3), 238–251.

Rafiska, R., & Susanti, R. (2023). Analisis Profil Gaya Belajar Peserta Didik Sebagai Data Pembelajaran Berdiferensiasi Di Kelas Xii Sma Negeri 1 Palembang. *Research and Development Journal of Education*, *9*(1), 474–482. http://dx.doi.org/10.30998/rdje.v9i1.17043

Rahmawati, R. (2023). Implementasi Pembelajaran Berdiferensiasi dalam Kurikulum Merdeka di Sekolah Dasar. *Social, Humanities, and Educational Studies (SHES): Conference Series*, *6*(3). https://doi.org/10.20961/shes.v6i3.82334

Rompis, F. F. (2023). Peningkatan Hasil Belajar Siswa pada Materi Aritmetika Sosial Melalui Pembelajaran Berdiferensiasi. *Jurnal Didaktika Pendidikan Dasar*, *7*(1), 219–236. https://doi.org/10.26811/didaktika.v7i1.1054

Sari, M., & Asmendri, A. (2020). Penelitian kepustakaan (library research) dalam penelitian pendidikan IPA. *Natural Science*, *6*(1), 41–53. https://doi.org/10.15548/nsc.v6i1.1555

Suhendro, E. (2020). Strategi pembelajaran pendidikan anak usia dini di masa pandemi covid-19. *Golden Age: Jurnal Ilmiah Tumbuh Kembang Anak Usia Dini*, *5*(3), 133–140. https://doi.org/10.14421/jga.2020.53-05

Suwartiningsih, S. (2021). Penerapan pembelajaran berdiferensiasi untuk meningkatkan hasil belajar siswa pada mata pelajaran IPA pokok bahasan tanah dan keberlangsungan kehidupan di Kelas IXb semester genap SMPN 4 Monta tahun pelajaran 2020/2021. *Jurnal Pendidikan Dan Pembelajaran Indonesia (JPPI)*, *1*(2), 80–94. https://doi.org/10.53299/jppi.v1i2.39

Utami, S. H. A., Marwoto, P., & Sumarni, W. (2022). Analisis kemampuan literasi sains pada siswa sekolah dasar ditinjau dari aspek konten, proses, dan konteks sains. *Jurnal Pendidikan Sains Indonesia (Indonesian Journal of Science Education)*, *10*(2), 380–390. https://doi.org/10.24815/jpsi.v10i2.23802

Wahyudi, S. A., Siddik, M., & Suhartini, E. (2023). Analisis Pembelajaran IPAS dengan Penerapan Pendekatan Pembelajaran Berdiferensiasi dalam Kurikulum

Merdeka. *Jurnal Pendidikan MIPA*, *13*(4), 1105–1113. https://doi.org/10.37630/jpm.v13i4.1296

Yunita, V., Sujinah, S., & Yarno, Y. (2024). Pengembangan Modul Ajar Berdiferensiasi Berbasis ADDIE pada Mata Pelajaran Bahasa Indonesia di SMK Negeri 2 Bojonegoro. *Jurnal Pendidikan Madrasah*, *9*(1), 115–122. https://doi.org/10.14421/jpm.2024.115-122