

VIDYA KARYA

Bibliometric Analysis of Research Trends on Differentiated Learning In Merdeka Curriculum

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Abstract. *This research employed bibliometric analysis which aimed to analyze differentiated learning research trends in the Merdeka Curriculum and visualize them. The database used was Google Scholar. Based on the search results with the keyword "differentiated learning" through Publish or Perish (PoP), 41 articles were obtained and then analyzed into 28 articles based on predetermined criteria. Vosviewer was used to visualize the data obtained. From the results of the analysis, it was found that publications on differentiated learning start from 2020-2023, and the number continues to increase every year. The articles analyzed came from accredited national journals Sinta 3, Sinta 4, Sinta 5, and national journals. In addition, ten authors with the highest number of citations were obtained. The findings of this research show that differentiated learning topics in 2023 and beyond can continue to develop in various fields both in research subjects, subjects, implementation or the influence of differentiated learning on teacher competence.*

Keywords: *Bibliometric Analysis; Differentiated learning; DPoP; Merdeka Curriculum; Vosviewer*

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INTRODUCTION

Education is a forum that provides opportunities for individuals to adapt to changing environmental conditions and the world advancement, thereby require every stakeholder in education, including policymakers, principals, and teachers, to improve their skills. Thus, the effective educational practices can be achieved. In 2023, the government assumed responsibility by implementing Merdeka curriculum as an expansion of the 2013 curriculum. The Merdeka curriculum

provides teachers the freedom to design high-quality instruction that is tailored to students' needs and learning environments. Its implementation obviously refines the preceding curriculum. The Merdeka curriculum places an emphasis on the humanities by adapting to the students' needs. This type of education is referred to as differentiated learning (Khoirurrijal et al., 2022).

Differentiated learning is a relatively new learning method

developed, and the research and development of differentiated learning has not been conducted much (Anggraena et al., 2021; Herdianto, 2023). This learning method provides multiple ways for all students in a diverse classroom community to comprehend new information, including ways to acquire content, construct ideas, and and develop learning products and assessment measures so that all students from diverse backgrounds can effectively learn (Heacox, 2002). The objective of differentiated learning is for students to feel secure while learning, for their hard and soft skills to increase, and for them to achieve learning success. Students are able to ruminate on their abilities from the beginning of learning, throughout the learning process, and at the conclusion of learning.

One example of the application of differentiated learning is the Vianestic strategy which stands for Visual, Auditorial and Kinesthetic (Gusteti & Neviyarni, 2022). Teachers can implement this strategy via Intracurricular, Curricular / P5, and UKK (*Unjuk Kerja dan Karya*) activities, as well as Extracurricular activities (Untari, 2023). The Vianestic strategy should be progressively implemented as an example of differentiated learning in the classroom. It can be initiated by routinely incorporating one learning strategy per week, so that by the end of a semester, at least 48 alternative differentiated learning strategies have been accumulated. A teacher must also continue to collaborate with a variety of parties, including teacher colleagues and school parties, to continue developing this differentiated learning. Applying Merdeka curriculum in creating a Pancasila student profile necessitates sharing teaching practices, making results transparent, engaging in critical dialogues about enhancing learning instructions, and providing facilities for

differentiated learning planning (Wati et al., 2022).

Implementing differentiated learning requires three distinct strategies namely content, process, and product differentiation. Content differentiation refers to what is taught to students based on their learning readiness, interests, or learning profile (visual, auditory, kinesthetic), or even a combination of these factors. Process differentiation requires students to comprehend the material to be learned independently or in groups by providing leveled activities, guiding questions or challenges, creating individual student agendas, varying time, developing diverse activities, and employing flexible clustering. Product differentiation focuses on the expected results from students by offering challenges or variations and allowing them to select products of their interest (Kasiyanti, 2021).

Researchers are interested in evaluating the implementation of differentiated learning in the Merdeka Curriculum. However, research on the implementation of differentiated learning in the Merdeka Curriculum remains scarce (Aprima & Sari, 2022a; Astiti et al., 2021; Himmah & Nugraheni, 2023; Iskandar, 2021; Kamal, 2021; Suwartiningsih, 2021b). To review further, it is necessary to map the research conducted on differentiated learning. Therefore, it is essential to conduct a bibliometric analysis on this topic with the objective of analyzing and visualizing the research trends of differentiated learning in the Merdeka Curriculum over the period of 2020-2023. This study's problem formulations are as follows: (1) How many publications are produced each year? (2) Which journals publish articles on the topic? (3) Who are the top ten researchers on the topic? and (4) What are the trends on differentiated learning research in the Merdeka Curriculum based on co-occurrence analysis?

METHOD

The research method employed was bibliometric analysis (Garza-Reyes,

2015). The stages of bibliometric analysis carried out (Zainuddin et al., 2021) are listed in Figure 1.



Figure 1 The Stages of Bibliometric Analysis

The stages of bibliometrics analysis in this research are depicted in Figure 1. The utilized database was Google Scholar. Based on the search results for "differentiated learning" on Publish or

Perish (PoP), 41 articles including journals, proceedings, books, and final assignments were found as depicted in Figure 2.

Cites	Per y...	Rank	Authors	Title	Year	Publication
1	1.00	1	NNK Wati, NAP L...	Analisis Pendekatan CBSA dan Pembelajaran Berdeferensiasi dalam Pembelajaran Bahasa Indo...	2022	Wacana Akademika
0	0.00	2	KL Purwanti, YL S...	Pemahaman Konsep Matematika Siswa pada Pembelajaran Berdeferensiasi dengan Pendekata...	2022	Prosiding Seminar ...
2	2.00	3	E Sasmito	Upaya Mewujudkan Student Well Being melalui Peningkatan Kompetensi Guru dalam Menera...	2023	Jurnal Terapan Pendi
4	2.00	4	NP Swandewi	IMPLEMENTASI STRATEGI PEMBELAJARAN BERDIFERENSIASI DALAM PEMBELAJARAN TEKS ...	2021	Jurnal Pendidikan DE
0	0.00	5	M Muslimin, B HI...	Peningkatan Hasil Belajar Matematika Siswa Melalui Pembelajaran Berdeferensiasi dalam Mewu...	2022	Jurnal Pendidikan ...
0	0.00	6	SK Untari	IMPLEMENTASI PEMBELAJARAN DIFERENSIASI PADA KEGIATAN INTRAKULIKULER, KO-KULLI...	2023	INVENTA: Jurnal Pen
5	5.00	7	NA Nurcahyono, ...	Hambatan Guru Matematika Dalam Mengimplementasikan Kurikulum Merdeka Di Sekolah Da...	2022	Wacana Akademika:

Figure 2 PoP Search Display for “Differentiated Learning”

The obtained data was compiled into a single RIS-formatted file, which was then imported into Mendeley Desktop. Then, only journal articles were analyzed. In addition, the article's meta data were reviewed and completed in terms of article title, author, journal, publication year, volume, page number, abstract content, and keywords. The complete data were then re-stored in RIS format and visualized using Vosviewer,

in the aspects of network visualization and overlay visualization.

RESULTS AND DISCUSSION

The Number of Publications Per Year on Differentiated Learning in the Merdeka Curriculum

The publication data for the period 2020-2023 was obtained based on the Google Scholar database on differentiated learning in the Merdeka Curriculum as shown in Figure 3.

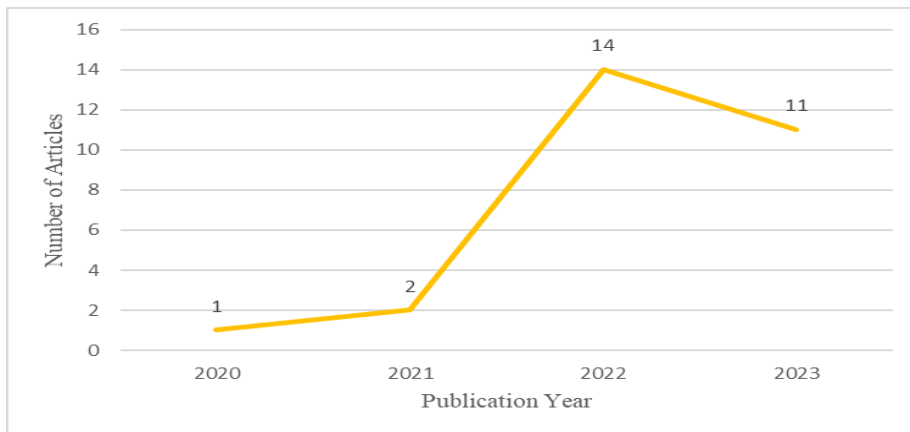


Figure 3 The Number of Publications Per Year on Differentiated Learning in the Merdeka Curriculum

The number of publications on this topic has increased, as shown in Figure 3. This cannot be separated because the currently implemented curriculum is the Merdeka Curriculum, which includes differentiated learning. Research on this topic in 2020 was only 1 article (Subekti & Kurniawati, 2020), in 2021 there were 2 articles (Suwartiningsih, 2021a; Swandewi, 2021), in 2022 there were 14 articles (Aprima & Sari, 2022b; Lubaba & Alfiansyah, 2022; Nurcahyono & Putra, 2022), and 2023 there were 11 articles (Herdianto, 2023; Sasmito, 2023; Setyawati, 2023; Untari, 2023). It is predicted that research on differentiated learning will continue to expand beyond 2023.

Sources of Articles/Journals of Differentiated Learning in Merdeka Curriculum

Figure 4 depicts the distribution of articles and journals published on this topic based on the Google Scholar database on differentiated learning in the Merdeka Curriculum.

Figure 4 shows that articles on differentiated learning in the Merdeka Curriculum come from Sinta 3 accredited national journals (Muslimin et al., 2022), Sinta 4 (Gusteti & Neviyarni, 2022; Rosadi et al., 2022; Wati et al., 2022), Sinta 5 (Hardi & Mudjiran, 2022; Jannati et al., 2023; Untari, 2023), and national journals (Azis et al., 2022; Manggalastawa, 2023; Nurhidayati, 2022).



Figure 4 Articles/Journals of Differentiated Learning in Merdeka Curriculum

Top 10 Researchers Investigating differentiated learning in the Merdeka Curriculum

Table 1 lists the top 10 researchers on the topic based on the number of citations in the Google Scholar database on differentiated learning in the Merdeka Curriculum.

The articles published in 2020 regarding online learning design during a pandemic contain the most topic citations. This article illustrates that when online learning takes place, it provides researchers with the knowledge to design engaging learning to meet the requirements of students. The second-

most-cited article is a 2022 publication that analyzes the application of differentiated learning in the implementation of Merdeka Curriculum. The results demonstrate that the application is highly effective, as comprehension has increased. In addition, the differentiated learning process incorporates a variety of learning media suited to the requirements of each student's learning style, so that students are more motivated to participate in the learning process. This result is a reference required by researchers for their own research.

Table 1 Top 10 Researchers Investigating Differentiated Learning in the Merdeka Curriculum

Cites	Authors	Title	Year	Source	Sinta
44	(Subekti & Kurniawati, 2020)	Pelatihan mendesain pembelajaran daring menarik selama pandemi Covid-19 dengan teknologi pembelajaran sederhana	2020	Dinamisia: Jurnal Pengabdian Kepada Masyarakat	Sinta 4
25	(Aprima & Sari, 2022b)	Analisis Penerapan Pembelajaran Berdiferensiasi Dalam Implementasi Kurikulum Merdeka Pada Pelajaran Matematika SD	2022	Cendikia: Media Jurnal Ilmiah Pendidikan	Sinta 5
21	(Suwartiningsih, 2021a)	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	2021	Jurnal Pendidikan dan Pembelajaran Indonesia (JPPI)	-
19	(Lubaba & Alfiansyah, 2022)	Analisis Penerapan Profil Pelajar Pancasila Dalam Pembentukan Karakter Peserta Didik di Sekolah Dasar	2022	EDUSAINTEK: Jurnal Pendidikan, Sains dan Teknologi	Sinta 5
5	(Nurchayono & Putra, 2022)	Hambatan Guru Matematika Dalam Mengimplementasikan Kurikulum Merdeka Di Sekolah Dasar	2022	Wacana Akademika: Majalah Ilmiah Kependidikan	Sinta 4
4	(Swandi, 2021)	Implementasi strategi pembelajaran berdiferensiasi dalam pembelajaran teks fabel pada siswa kelas vii h smp negeri 3 denpasar	2021	Jurnal Pendidikan DEIKSIS	-
4	(Gusteti & Neviyarn)	Pembelajaran berdiferensiasi pada pembelajaran matematika di kurikulum merdeka	2022	Jurnal Lebesgue: Jurnal Ilmiah	Sinta 4

Cites	Authors	Title	Year	Source	Sinta
	i, 2022)			Pendidikan Matematika, Matematika dan Statistika	
3	(Isa et al., 2022)	Peran Kepala Sekolah dalam Implementasi Kurikulum Merdeka di Sekolah Dasar	2022	Jurnal Basicedu	Sinta 5
2	(Sasmito, 2023)	Upaya Mewujudkan Student Well Being melalui Peningkatan Kompetensi Guru dalam Menerapkan Pembelajaran Berdeferensiasi di SMA Negeri 1 Talun Kabupaten Blitar	2023	Jurnal Terapan Pendidikan Dasar dan Menengah	-
1	(Wati et al., 2022)	Analisis Pendekatan CBSA dan Pembelajaran Berdeferensiasi dalam Pembelajaran Bahasa Indonesia	2022	Wacana Akademika: Majalah Ilmiah Kependidikan	Sinta 4

Research Trends on Differentiated Learning in Merdeka Curriculum based on Co-Occurrence

The results of network visualization and overlay visualization by using Vosviewer for 28 articles encoded in RIS format are depicted in Figures 5 and 6.

Figure 5 demonstrates, through co-occurrence analysis, that the topic generates 14 clusters. Each cluster's keywords are listed in Table 2.

Network visualization of the bibliometrics analysis results demonstrates that differentiated learning is associated with 14 clusters of keywords. Based on the keywords in the first cluster in red, it focuses on the implementation of learning. In addition

to the classroom, learning also occurs through extracurricular activities (Untari, 2023). This learning is closely related to the Pancasila student profile-centered character development. Among the strategies used for learning is the Vianestic strategy (Himmah & Nugraheni, 2023). This strategy focuses on adapting the learning process to the various learning styles of students. In addition, the implementation of differentiated learning is not only viewed from the implementation at school; this cluster demonstrates that students enrolled in pre-service teacher professional education must be able to implement the differentiated learning (Saraswati et al., 2022).

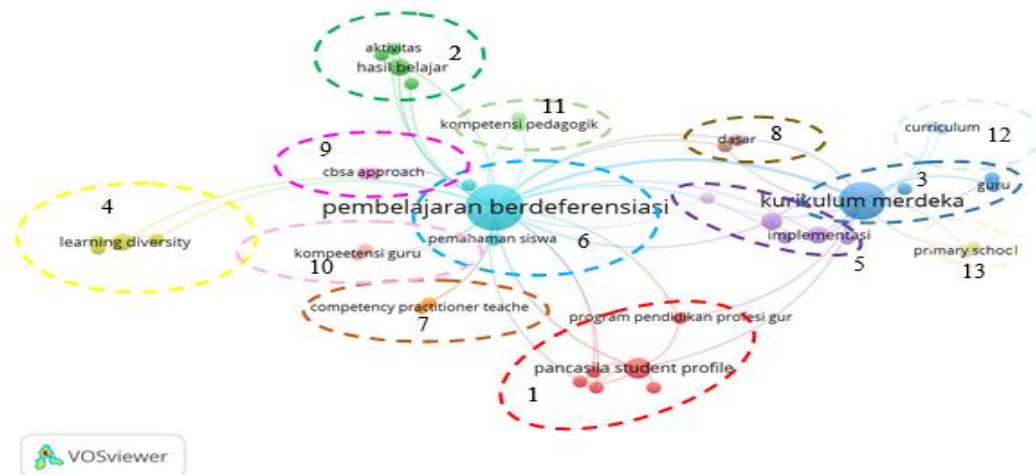


Figure 5 Network Visualization of Differentiated Learning in Merdeka Curriculum

Table 2 Keywords of Each Cluster

No	Cluster	Keyword
1	Red	Character, <i>ekstrakurikuler</i> , <i>kegiatan intrakurikuler</i> , pancasila student profile, <i>program pendidikan profesi guru prajabatan</i> , <i>strategi Vianestic</i>
2	Green	<i>Aktivitas</i> , <i>hasil belajar</i> , <i>mata pelajaran ipa</i> , problem-based learning
3	Sea blue	<i>Guru</i> , <i>implementasi kurikulum</i> , <i>kurikulum merdeka</i> , <i>problematika</i>
4	Yellow	Elementary school, learning diversity, <i>multikultural dan gender</i> , <i>sosiokultural</i>
5	Purple	<i>Implementasi</i> , <i>matematika</i> , <i>pendidikan agama islam</i> , <i>penerapan pembelajaran</i>
6	Cloud blue	<i>Pemahaman siswa</i> , <i>pembelajaran berdeferensiasi</i> , <i>pembelajaran teks fable</i>
7	Orange	Competency practitioner teachers, learning needs
8	Brown	<i>Dasar</i> , <i>pembelajaran matematika sekolah</i>
9	Magenta	CBSA approach, Indonesia learning
10	Pink	<i>Kompetensi guru</i> , student well being
11	Lime	<i>Kompetensi pedagogik</i> , <i>supervisi akademik</i>
12	Light blue	Curriculum, planning
13	Light yellow	Primary school, teacher obstacle
14	Light brown	<i>Anak usia dini</i>

The second green cluster demonstrates that the implementation of differentiated learning is inseparable from the type of model, learning activities, and instructional materials that support the enhancement of student learning outcomes. The findings of previous research indicate that the application of learning models by adjusting the learning styles of students can enhance the learning outcomes (Astuti et al., 2021; Iskandar, 2021; Suwartiningsih, 2021). The third cluster is ocean blue, signifying that the implementation of the Merdeka Curriculum cannot be separated from differentiated learning. Current research trends continue to examine the implementation of differentiated learning in Merdeka Curriculum (Kamal, 2021). The fourth yellow cluster indicates that differentiated learning research is predominantly conducted at the elementary school level. The focus of the research is the gender and sociocultural of the learning environment. The tendency for research to be conducted on

mathematics and Islamic religious education materials is depicted by cluster five in purple and cluster eight in brown (Gusteti & Neviyarni, 2022). This affords the opportunity to conduct research on the topic of differentiated learning in other subjects.

Differentiated learning is closely related to inclusive education in schools. In inclusive schools, differentiated learning makes it possible for students with special needs to study alongside their peers (Marlina, 2020). In its implementation, teachers can utilize initial analysis to identify students' interests and preparedness to learn. The next cluster relates to teacher competence in general. As educators in schools, teachers must continue to adapt to altering circumstances. The implementation of the new curriculum paves the way for teachers to implement learning more creatively in the classroom. Through differentiated learning, students' needs will be met to the greatest extent possible. Students become enthusiastic about learning so

that the Pancasila student profile and student well-being can be actualized more rapidly. If a teacher is able to design learning and implement it in

accordance with the current curriculum, he has been able to increase his competence in carrying out his daily responsibilities (Sutaga, 2022).

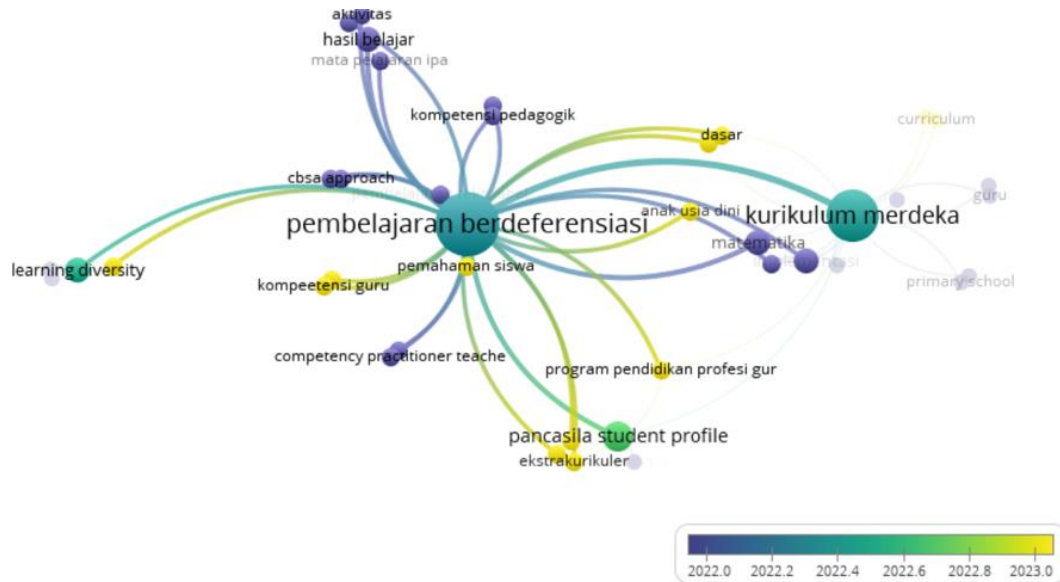


Figure 6 Network Visualization and Overlay Visualization of Differentiated Learning in Merdeka Curriculum

Figure 6 depicts an overlay visualization of research implementation pertaining to differentiated learning. The developing topics for 2023 include teacher competence, student well-being, elementary school, student comprehension, Vianestic strategies, extracurricular and intracurricular activities, teacher professional education programs, early childhood, mathematics learning in schools, and curriculum. The findings provide an overview of differentiated learning research in 2023, which can then be conducted at the secondary and even tertiary levels. In addition, the differentiated learning has been implemented in a variety of subjects such as mathematics (Gusteti & Neviyarni, 2022; Kamal, 2021), science (Astiti et al., 2021; Suwartiningsih, 2021b), Islamic education (Rosadi et al., 2022), and Indonesian language (Iskandar, 2021). After the implementation of differentiated learning in the Merdeka Curriculum, there is also

an opportunity to conduct research to assess the competence of teachers or prospective teachers.

CONCLUSION

The research conducted with the objective of mapping research on the topic of differentiated learning using bibliometric analysis showed that research on the topic of differentiated learning can continue to develop in various fields in 2023 and beyond, including research subjects, learning subjects, implementation and the impact of differentiated learning on teacher competence.

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