
What Do We Know About Differentiated Instruction in Primary Schools?: A Systematic Literature Review

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ABSTRACT

Differentiated learning is a concept that differentiates learning activities in class based on student learning readiness, student interests and student learning profiles. Differentiated learning is one of the government policies as part of the independent curriculum offered to overcome learning loss after the Covid-19 pandemic. This study aims to find out 1) the research methods used in researching differentiated learning in elementary schools, 2) the subjects of the research study 3) the findings that are the subject of these studies. The study method used in this analysis is a systematic review and meta-analysis (PRISMA). From data identification, article screening and presentation of articles in the 2018-2022 period, there are 33 articles ready for review according to the scope of differentiated learning in elementary schools. The results of the research show that the research method that is widely used is a type of quantitative research with the teacher as the research subject. The research findings show that the teacher's view of differentiated learning influences its practice in the classroom, teachers have different understandings regarding differentiated learning. Differentiated learning activities can improve the quality of student learning in class.

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1. INTRODUCTION

The Covid-19 pandemic which has been going on for the last two years has caused learning activities in schools to be carried out online or online for about two years. Online learning implemented in elementary schools has not run optimally. This is evidenced by several research results in various regions. The results of (Sugiyono, 2020) regarding the implementation of online learning in elementary schools with the subject of teacher research in Pacitan district show that the problems that often arise during online learning are the absence of an internet network, teachers find it difficult to use learning applications, difficulties in managing learning, lacking in supervise learning and less objective in conducting assessments. In line with the results of this study, the results of research by (Rigianti, 2020) in the Banjarnegara district show that the obstacles experienced by teachers in online learning are difficulties in using learning applications, internet networks and devices, learning management and non-objective assessment of learning outcomes. The results of research by (Rosalin., 2020), which took samples from 29 provinces, showed that 58% of children felt they had an unpleasant experience during the online learning period.

From the results of these two studies, we can see that the implementation of online learning in elementary schools cannot be carried out effectively. This of course has a direct influence on various abilities that students must master not only from a cognitive perspective but also from a skills standpoint. In addition, the implementation of online learning using gadgets or smartphones has a negative influence on the development of students' social skills. According to (Sianturi, 2021) using gadgets for a long time every day can affect children's behavior and can make children develop towards anti-social personalities. This is because elementary school-age children have not been able to filter what they have to learn through the smartphone or gadget. When learning activities are not accompanied by parents, children's attention while studying can be distracted, namely by seeking entertainment via smartphones. According to (Rahman et al., 2021) based on the results of their research at MIN 2 Bandung city there was a pandemic which caused students to study separately. online makes students lose their social personality habituation period, students' interactions with their peers are reduced and even disappear, causing students to become awkward individuals in association or even experience difficulties in carrying out social interactions. Based on this opinion, it shows that students lose time to develop their social skills through various habits that can be carried out at school.

Currently, after the covid pandemic ended, the real impact that is being faced by the world of education is the occurrence of learning loss. The results of research conducted by (Pusat Penelitian Kebijakan & INOVASI, 2021) conducted a study of 69 schools and 3,391 students. The study found a decreasing pattern of learning gain from grade 1 to grade 2 of 44 points for numeracy and 52 points for literacy. This decrease is equivalent to 5 and 6 months of learning. Another research was conducted by Puslatjik in collaboration with the INOVASI program in 2021 by collecting data from 18,370 students, 18,368 parents/guardians, 1,875 teachers, and 612 principals from a sample of schools and madrasas in eight provinces (Jambi, East Java, South Kalimantan, North Kalimantan, West Nusa Tenggara, East Nusa Tenggara, Southeast Sulawesi and North Maluku). This is done by considering the geographical aspects of both the western and eastern regions of Indonesia, as well as taking into account variations in the quality of education between districts in Indonesia. The findings of the study show that there is an increasingly widening learning gap between what is determined by the curriculum to be mastered by students, and student learning achievements. . When students don't master what they should have learned in one year it will have a compounding effect on what students can learn at the next level. If not addressed, the gap will continue to grow.

One of the government's efforts to overcome learning problems during the pandemic is by adapting differentiated instruction forms. Differentiated instruction is one of the learning innovations that allows teachers to carry out learning with multiple methods and multiple models. In addition, differentiated instruction is an attempt to adjust the learning process in the classroom. so that it can meet the needs of students in learning (Herwina, 2021). In line with this opinion, (Amin, 2009) states that differentiated instruction is learning that takes into account the individual differences of children. According to (Tomlinson & Imbeau, 2010) differentiated classes can provide different paths in order to acquire knowledge, understand ideas and develop products so that students can learn effectively. Furthermore, Tomlinson explained that there are several things that need to be considered when developing differentiated instruction, namely the teacher needs to develop a lesson plan. Differentiated instruction implementation plans can be arranged based on the first readiness of students, what is meant by readiness of students in this case is if the learning plan contains assignments that are in accordance with student skills and previous student understanding. the second is interest, namely that the task can later trigger curiosity or passion in students and the third is based on the student's learning profile, namely the lesson plan is able to encourage learning in a way that is preferred by students (Tomlinson, 2001) states that there are three forms of learning differentiation, in this case, content differentiation, process differentiation and product differentiation. Content differentiation can be done by providing different material for each student based on certain preferences. The second is process differentiation, the teacher can develop the learning process by applying learning variations. Variation of learning in this case is by differentiating student learning activities

in class. The third is by way of product differentiation, namely by providing different projects for each student or group of students so as to produce different learning products.

The government through the Ministry of Education and Culture has issued an academic paper on guidelines for implementing differentiated instruction in Indonesia. Differentiated instruction can be done by making process, product, content and learning environment differentiation. Examples of content differentiation learning are 1) presenting various materials; 2) using learning contracts; 3) provide mini-learning; 4) present material with various learning modes; and 5) providing various supporting systems. Learning activities with process differentiation, namely by adjusting to readiness, interests and student learning profiles, for example by using Think - Pair - Share, Assignments using RAFT (Role Audience Format Topic) according to students' interests, peer tutors according to learning styles and so on. Furthermore, product differentiation is by differentiating products that can be produced by students, for example the teacher can determine a certain topic and then the teacher can explain what products students can make. And finally, the differentiation of the learning environment includes personal, social and physical class arrangements. The teacher can prepare seating arrangements that are differentiated based on interest, readiness and student learning profiles that have been identified by the teacher before (Purba et al., 2021)

Government policies related to the implementation of differentiated instruction are then implemented in elementary schools, especially in driving schools and schools that have implemented an independent curriculum through outreach and technical guidance. For this reason, regarding the implementation of differentiated instruction, it has not been widely applied in Indonesia. This article aims to examine 1) What research methods are used in researching differentiation learning in elementary schools, 2) who is the subject of the research study 3) what themes are discussed in these studies.

2. RESEARCH METHODS

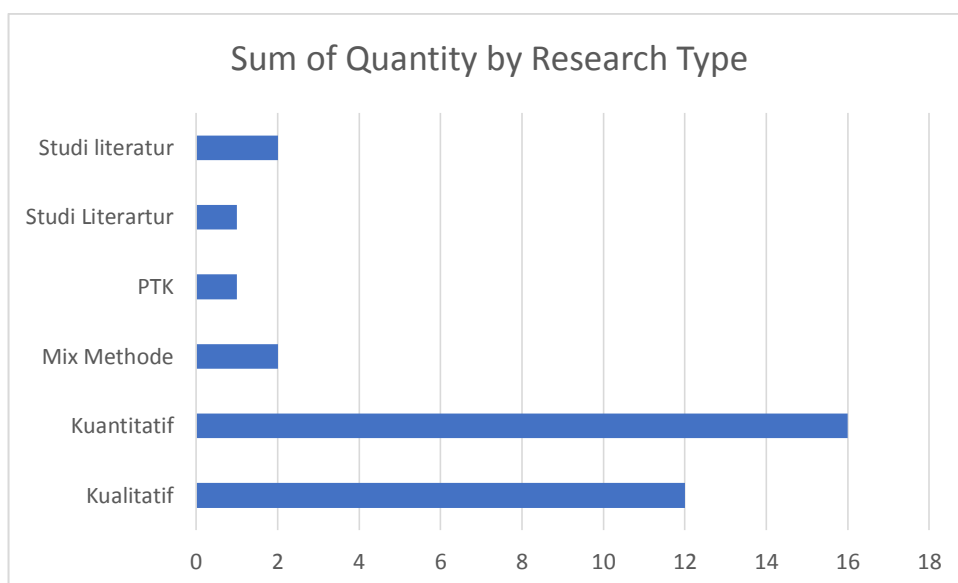
This study examines the results of research on differentiated learning using a systematic review and meta-analysis (PRISMA). The article search process is carried out by utilizing the publish or perish tool. A search for articles was carried out on Scopus with years of publication from 2018 to 2022. Based on search results using the keyword differentiated instruction a total of 164 articles were found, the appearance of these articles is sorted from the highest citation to the article with the lowest citation. Selection is done by selecting articles with the object of study in the field of basic education, or one of which in the study includes basic education. From this selection, 48 articles were obtained. Furthermore, three articles were excluded because they were duplicated or the same as the previous article. There are 45 articles. Then sort back because there are articles that cannot be accessed so that the total number of articles to be analyzed is 33 articles.

3. RESULT AND DISCUSSION

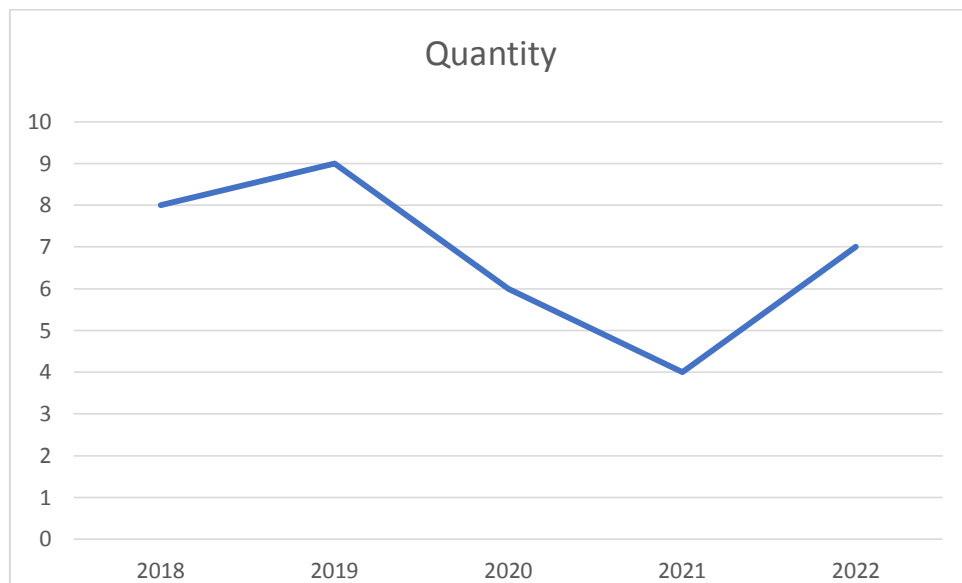
RESULT

a. By The research Method Type

The results of the study show that the most widely used type of research is quantitative research as shown in the graph below.



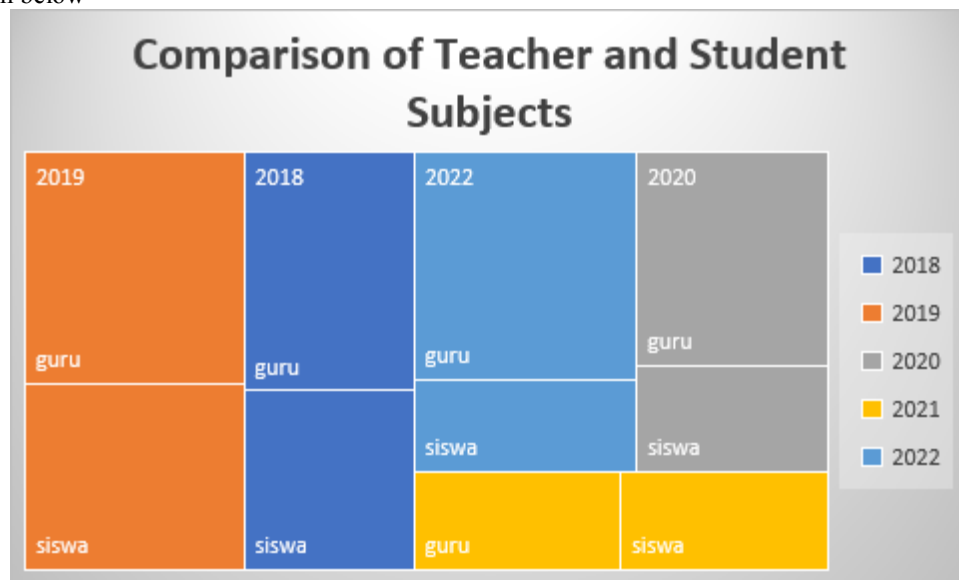
From the graph, we can see that the most widely used type of research to examine topics about differentiated learning is quantitative research, followed by qualitative research, mixed methods, literature studies and classroom action research. While the research trend from year to year can be seen in the graph below.



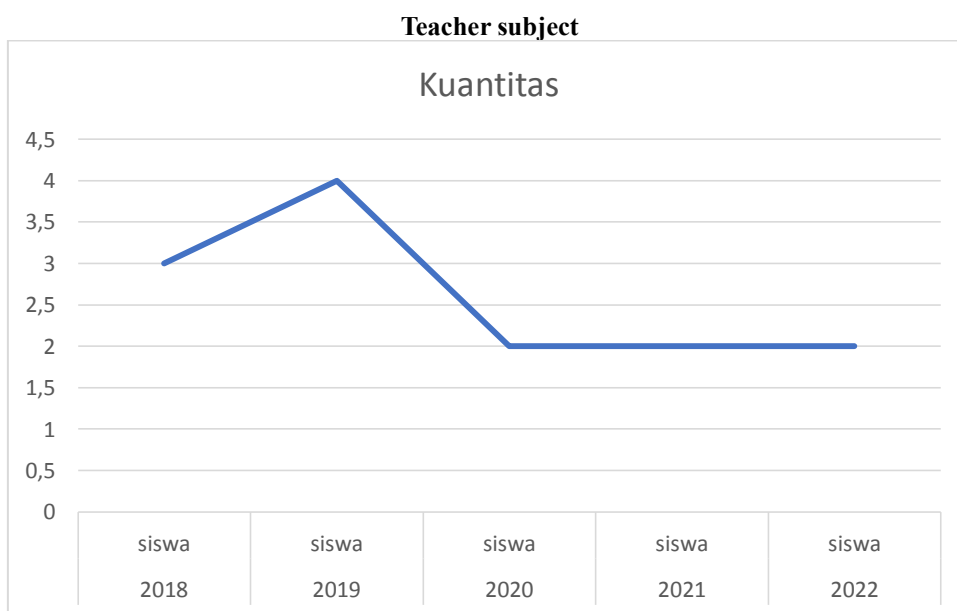
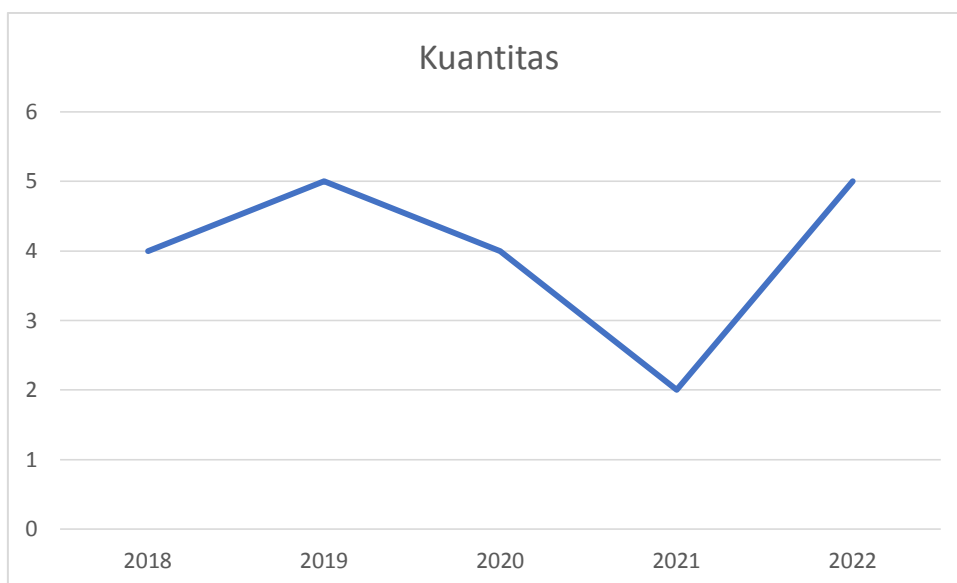
Based on the table, we can observe research trends from year to year showing that the most research on differentiated learning in elementary schools is done in 2019, while the least is done in 2021.

b. Subject of study In the article

Based on the analysis shows that the dominating research subject is the teacher as shown in the diagram below



From this diagram it can be analyzed that most of the research focus is on how teachers implement differentiated learning in the classroom, not on how the results or outcomes are obtained by students through the implementation of these differentiated learning activities. Meanwhile, if we look at the trend of differentiated learning research subjects, we can see in the following graph.



Student subject

From this research trend, it can be analyzed that the research trend on differentiation learning with teacher subjects will peak in 2019 and 2022. Meanwhile, research on differentiated learning with student subjects peaked in 2019.

Comparison of the subject of this research is intended to find out how the position of learning is differentiated in elementary schools, whether it is emphasized to intervene in student learning in class or to intervene in the way teachers teach. From the results of the analysis it can be seen that the research focus is still on the teacher as the subject, meaning that research related to differentiated learning in elementary schools focuses more on how the teacher teaches or what is the position of the teacher in the implementation of differentiated learning.

DISCUSSION

The research findings show that the variables associated with differentiated learning include self-efficacy, inclusive education, science learning, reading, writing, mathematics, leadership, teacher perceptions, performance appraisal, academic ability and critical thinking.

The findings in this study can be seen in the table that has been presented. The table contains the author's name, research title, year of research, type of research, research subjects and research findings that have been obtained.

Title	Year	Research methods	Research subject	Research findings
1. Ninković, S. (2022). Transformational leadership and teachers' use of differentiated instruction in Serbian schools: investigating the mediating effects of teacher collaboration and self-efficacy	2022	quantitative	teacher	the results reveal that teacher collaboration and self-efficacy mediate the relationship between transformational school leadership and teachers' use of different instruction.
2. Peters, MT. Effects of Providing Teachers With Tools for Implementing Assessment-Based Differentiated Reading Instruction in Second Grade. Assessment for Effective	(2022)	quantitative	teacher	The results show that the teacher using the <i>learning progress assessment</i> (LPA) does not show an increase in ability in reading fluency or reading comprehension compared to the control group.
3. Gaitas, S. Differentiated instruction: 'to be, or not to be, that is the question'. International Journal of Inclusive Education	(2022)	qualitative	teacher	the majority of reported self-practice described DI as providing only one task to most students and fewer or easier activities for students who were making an effort to their learning.
4. Letzel, V. Challenging but positive! – An exploration into teacher attitude profiles towards differentiated instruction (DI) in Germany	(2022).	qualitative	teacher	The findings from this study indicate that teachers not only perceive the value of DI but also have insufficient resources. Thus, it could be argued that teachers identified 'and 'negative' aspects of DI, and more importantly, they could recognize both domains of attitudes toward DI at the same or different levels. As a result, it shows that attitudes in the context of inclusion cannot be characterized as a continuum with two different poles.
Yuen, SY. Teachers' perceptions and practices of differentiated instruction: Cross-cultural validation of the differentiated instruction questionnaire in Hong Kong.	2022	quantitative	teacher	This study evaluated the psychometric properties of the Chinese version of the DI-Quest (C-DI-Quest) and appears to be a promising and emerging instrument. C-DI-Quest maintains the same five-factor structure as the original version with good internal consistency, which opens up possibilities for comparative research between HK and Western countries. With validated local DI models emphasizing the mediating role of adaptive teaching, future research may take advantage of this multi-construction

Title	Year	Research methods	Research subject	Research findings
6. Aikaterini, TA (2022). Differentiated Instruction and Portfolio Assessment: Motivating Young Greek-Romani Students in the English Class. WorldJournal of English Language	2022	quantitative	student	The findings from the pre and post tests revealed that there was greater progress regarding the skills of the experimental group. However, statistical analysis (SPSS 26) showed that there was no significant difference. Answers from the portfolio assessment checklist, while scarce, highlight the role of portfolio motivation in student engagement. The results of the semi-structured interviews showed the overall positive attitude of the students towards the strategies used. However, the broad outflow of attendance, the short study period, the limited sample, as well as the lack of equipment provision suggest more extended future research.
7. Scarparolo, G. Student voice as part of differentiated instruction: students' perspectives	2022	qualitative	student	Two themes were identified through the thematic analysis: student choice and engagement. Overall, the students in this study stated that they wanted more voice and choice in their future learning. With increasing expectations on teachers to differentiate teaching in response to the diverse needs of students, teachers may consider adopting voice-inclusive practices to inform planning and adopting a more participatory pedagogy.

Title	Year	Research methods	Research subject	Research findings
8. Zerai, D. The meanings of differentiated instruction in the narratives of Eritrean teachers	2021	qualitative	teacher	The results of the narrative analysis show that teachers construct five DI meanings in their narratives: as a caring orientation, as a flexible pedagogic approach, as a process of self-reflection, as a failed attempt and as a demanding approach. The majority of narratives were found to produce positive meanings of DI, and teachers built a strong agency to carry out DI. These examples of sophisticated DI practices in teacher positive narratives can be used to apply DI, even in situations where teachers have limited resources and training and in contexts with large class sizes.
9. Palieraki, S. Differentiated instruction in information and communications technology teaching and effective learning in primary education	2021	PTK	STUDENT	The research findings highlight the improvement in the quality of student assessment and the level of student active participation due to different teaching. Furthermore, the flexible grouping strategy, the “thumbs up” card technique and the different work routines used proved to be very effective. Lastly, implementing asynchronous work combined with hierarchical learning activities has proven to be a challenge for educators because of its complexity. Based on these findings, the article discusses the importance of further research into the systematic implementation of differentiated instruction in mixed ability classes and across several subjects.

Title	Year	Research methods	Research subject	Research findings
Clark, KF. Primary Grade Students' Achievement Given Differentiated Process Writing Instruction in a Summer Learning Program	2021	Quantitative	Student	Students entering at the Tier 2 level (N = 8) showed a significant average improvement on the TCRWP On-Demand Performance Assessment and the CWS assessment. Their Test of Early Writing Language-3 (TEWL-3) pretest and posttest scores were comparable. Students entering at the Tier 3 level (N = 33) showed a significant increase in average across all assessments. An analysis of progress relative to CWS year-end performance targets revealed five out of eight Grade 2 students scored within Grade 1 on the posttest. Three students continued to score in Grade 2. Three students in Grade 3 scored in Grade 1 on the posttest. Eighteen scored goals in Tier 2. Twelve continued to score in Tier 3.
Strogilos, V. Differentiated instruction for students with SEN in mainstream classrooms: contextual features and types of curriculum modifications	2021	qualitative	teacher	The findings provide strong evidence that contextual constraints, such as class size, common standard curricula and national exams are critical barriers influencing the type of curriculum modification used. Participants proposed a "test-free" pedagogy to increase diversity in modifications. This research implies the need to consider contextual features that impact the quality of learner-centred instruction internationally.
Al-Shehri Effect of Differentiated Instruction on the Achievement and Development of Critical Thinking Skills among Sixth-Grade Science Students	2020	quantitative	student	The findings show an increase in academic performance of the experimental group, which was taught using instructional programs based on differentiated instructions. Participants are able to increase the level of deep critical thinking skills science. This study recommends using this instructional strategy in different school subjects other than science. This study also recommends training teachers on its application in the classroom.

Title	Year	Research methods	Research subject	Research findings
3. Magableh, Effectiveness of Differentiated Instruction on Primary School Students' English Reading Comprehension Achievement	2020	quantitative	student	The findings show that the application of different and operational instructions in improving the ability of EFL students reading comprehension achievement for Jordanian fourth and fifth graders . The experimental group statistically outperformed the control group , indicating that differentiated education can reduce differences in class quality
4. Onyishi, CN Teachers' perspectives on the use of differentiated instruction in inclusive classrooms: Implications for teacher education.	2020	quantitative	teacher	The results showed that the extent to which teachers applied DI was low, and time constraints limited the use of DI. The results further reveal that teachers need more information about how to develop rubrics; student-directed assessment; how to manage large classes when implementing DI; how to use different instructions without compromising the content of the curriculum; the need to change the class structure to accommodate small groups; and the need for more training on DI and provision of diverse learning aids in schools.
15. Wan, SWY Unpacking the Relationship Between Teachers' Perceptions of Professional Learning Communities and Differentiated Instruction Practice	(2020).	quantitative	teacher	This study illustrates the value of understanding teachers' PLC (<i>professional learning communities</i>) <i>engagement</i> , as well as providing a better understanding of how PLC engagement is intended to encourage DI practice. The findings indicated that teachers' PLC engagement was related to DI practice: Higher levels of PLC engagement were closely related to higher levels of DI practice.

Title	Year	Research methods	Research subject	Research findings
16. Vantieghem, W. Professional vision of inclusive classrooms: A validation of teachers' reasoning on differentiated instruction and teacher-student interactions. <i>Studies in Educational Evaluation</i>	2020	quantitative	teacher	The results showed that PTSI's latent construct (<i>positive student teacher interaction</i>) consisted of three sub-dimensions: individual needs, a safe & structured environment, and student involvement. The latent construct of DI consists of four sub- dimensions: active learning, instructional clarity, adaptive teaching, and flexible grouping. The robustness of these findings across contexts demonstrates the centrality of this dimension in teachers' reasoning about the inclusive classroom.
17. Gheysens, E. (2020). Differentiated instruction: the diversity of teachers' philosophy and praxis to adapt teaching to students' interests, readiness and learning profiles	.2020	qualitative	teacher	The results reveal three teacher profiles based on five factors related to learning differentiation. The pattern is almost the same in primary and secondary education. Interestingly, if more frequent adjustments to differences in students' interests, readiness, and learning profiles are different teaching goals, both philosophical factors (i.e. a growth mindset and a student-oriented ethical compass) need to be present. Lacking any of these factors, will have less adaptation as a consequence. This study showcases the predictive power of teachers' philosophy of Differentiation Instruction for their everyday classroom practice. The consequences for future research, professional development and teacher education are discussed in detail.

Title	Year	Research methods	Research subject	Research findings
18. Geel, M. van Capturing the complexity of differentiated instructions. School Effectiveness and School Improvement	2019	qualitative	teacher	The resulting hierarchy of differentiation skills is presented here, along with the knowledge required for differentiation, and the factors that influence its complexity. Based on these CTA insights (<i>cognitive task analyses</i>), professional development trajectories can be devised and comprehensive assessment instruments can be developed, enabling researchers and practitioners to train, assess, and monitor teaching quality with respect to differentiating instruction.
19. Bondie, RS How Does Changing “One-Size-Fits-All” to Differentiated Instruction Affect Teaching?. Review of Research in Education,	2019	Literature review	teacher	The findings show how the many different frameworks used to define DI shape changes in teacher practice and roles. DI objectives vary widely from systematic responses to policies to informal teachers' perceptions of student differences. Barriers include DI decision sources (institutions vs teachers). The facilitator focuses on the teacher's view of time, resources, control, and dispositions towards difference and ambiguity. The need for systematically replicable studies with greater methodological rigor is discussed and a more integrative definition of DI that focuses on teacher instructional reasoning and decision making is proposed for future research.
20. Zafiri, M. The application of differentiated instruction in reading and writing for a boy with autism in early childhood education	2019	qualitative	student	The results of this study indicate that the application of differentiated learning has provided positive results for boys with autism, both in reading and writing.

Title	Year	Research methods	Research subject	Research findings
21. Whitley, J. Implementing differentiated instruction: a mixed-methods exploration of teacher beliefs and practices.	(2019).	Mix method	teacher	This study explores the relationship between individual and contextual variables on teachers' use of DI practices based on data from surveys (N = 4875) and focus groups (N = 46). The results show that belief, self-efficacy and organizational support are significantly related to teachers' DI practices. Teachers describe varying understandings, misconceptions and beliefs about DI
22. Goddard, YL From school leadership to differentiated instruction a pathway to student learning in schools.	2019	quantitative	teacher	our findings suggest that instructional leadership is positively and significantly related to teachers' reports of different learning practices regardless of school demographics and past student achievement. Furthermore, using multilevel structural equation modeling we found that differentiated instruction was a positive and significant predictor of student achievement. These findings are consistent with the conceptual understanding that leaders can influence school-wide learning practices that are linked to improved student achievement. We discuss the significant implications of the findings for researchers and practitioners.
23. Malacapay, M Differentiated instruction in relation to pupils' learning style.	2019	quantitative	student	the findings reveal that there is no significant difference between demographic profiles and learning styles. Thus, no significant relationship was also shown between learning styles and academic achievement. Lastly, it shows that both visual and auditory learners learn best when the teacher uses audio-visuals during presentations while kinesthetic learners learn best when applied to real objects. This implies that learning styles are independent, not limited, nor driven by. demographic profile and not influenced by academic achievement.

Title	Year	Research methods	Research subject	Research findings
24. Shareefa, M. Teachers' perceptions on differentiated instruction: Do experience, qualification and challenge matter?	2019	Mix method	teacher	The results showed that teachers had high perceptions of DI, while there was no statistically significant difference in teachers' perceptions based on their experience and identified qualifications. In addition, lack of resources, time, support, knowledge, and class size were identified as: obstacles to DI implementation.
25. Moosa, V. The impact of teachers' experience and qualification on efficacy, knowledge and implementation of differentiated instruction.	2019	quantitative	student	The results show that there is a statistically significant difference in teacher effectiveness at three experience groups, $F(2, 93) = 3.56, p = 0.032$. However, there were no significant differences in teachers' knowledge and implementation of DI based on either their experience or qualifications. The results also show that the two are not only teacher experience or qualifications, they are significant moderators of the implementation model of differentiated learning. It is suggested that teachers are equipped with sufficient knowledge about differentiated learning by including relevant content in teacher training programs.

Title	Year	Research methods	Research subject	Research findings
26. Prasetyo, S. Differentiated instruction approach on natural science lessons for slow learners at inclusive primary school. International Journal of Scientific and Technology	2019	qualitative	student	differentiated instruction approach on Science lessons for slow learners in inclusive primary schools which are held at SDN 30 Palembang as a role model for inclusive national education education, it is known that: 1) It was found that the highest prevalence of slow learning children was 55.65%; 2) The curriculum utilizes a combination of the classic KTSP and the 2013 curriculum which has not been modified based on the needs and diversity of students; 4) The learning implementation uses the peer tutoring strategy by using an affective approach, dynamic grouping and intense communication with parents about the development of slow learners via WhatsApp or meeting with student guardians
27. Neophytou, L. Interculturally differentiated instruction: Reflections from Cyprus classrooms	(2018)	Study of literature	teacher	teachers are unable to link intercultural competence with educational effectiveness, consequently failing to create inclusive learning practices that can maximize the potential for shared learning with intercultural competence for all children. Based on these findings, we question the effectiveness of teacher professional development in cross-culturally differentiated teaching.
28. Şentürk, C. Investigation of the contribution of differentiated instruction into science literacy. Qualitative Research in Education,	2018	Qualitative case study	student	It was concluded from the findings that different instruction enhances students' engagement with science-technology-society and environment and develops their scientific process skills and thus contributes to students' science literacy level.

Title	Year	Research methods	Research subject	Research findings
29. Ismaili, . Differentiated instruction: Understanding and applying interactive strategies to meet the needs of all students.	2018	Quantitative survey	teacher	research findings indicate that the understanding and implementation of DI in primary schools are not at the proper level and the differences between public and non-state schools are much less pronounced. Teachers pay more attention to products and paying less attention to content and process differentiation. Parents are also willing to collaborate with schools on this new way of teaching. Even though they have been provided professionally through training in Kosovo there is still a lot of work to be done so that teachers can understand, adopt, and succeed implement different instructions in their classes
30. Valiandes, S. Establishing a framework for blending intercultural education with differentiated instruction. Intercultural Education, 29(3), 379-398, ISSN 1467-5986, https://doi.org/10.1080/14675986.2018.1441706	(2018).	Theory overview	teacher	This research discusses the rationale for the development of a comprehensive framework that can be useful for discussion of theory as well as a guide for instructional practice.
31. Faber, J Differentiated instruction in a data-based decision-making context. School Effectiveness and School Improvement, 29(1), 43-63, ISSN 0924-3453, https://doi.org/10.1080/09243453.2017.1366342	(2018).	quantitative	student	No significant positive effects were found for different teaching practices. In addition, the findings indicated that students in the low ability group benefited less from different instruction than students in the average or high ability groups. Nevertheless, the findings, data collection, and data analysis procedures of this study contribute to a differentiated classroom observation and instruction measurement study.

Title	Year	Research methods	Research subject	Research findings
32. Prast, EJ. Differentiated instruction in primary mathematics: Effects of teacher professional development on student achievement. <i>Learning and Instruction</i>	(2018)	quantitative	teacher	In Year 1, teacher professional development (PD) had a small positive significant effect on the achievement growth of elementary school students in maple mathematics. The effect sizes were similar for low-achieving, average-achieving, and high-achieving students. In Year 2, no significant effect was shown. In summary, teacher's PD of differentiation has the potential to promote the achievement of all students. However, implementing differentiation is not easy and future research is needed to uncover which factors make PD on differentiation successful
33. Förster, N. Short- and long-term effects of assessment-based differentiated reading instruction in general education on reading fluency and reading comprehension.	(2018).	quantitative	student	This research was conducted in a German elementary school classroom. Third-grade classrooms (n = 28) were randomly assigned to either the LPA different instruction group or the control (CG) group. Students in the treatment group showed higher growth in reading fluency than students in CG (d=0.30). The effect was stable over the two-year study period. Students with lower reading skills benefited more from treatment. No effect was found on reading comprehension. Results are discussed with respect to teachers' use of data to differentiate instruction.

Differentiated Learning in Classroom Teaching Practices

The results of the literature study that has been carried out show how the complexity of implementing differentiated learning in the classroom. DI learning is related to the self-efficacy of a teacher and how his philosophical view of the considerations of implementing learning is differentiated in the classroom. Research studies that make the teacher a subject in differentiated learning also highlight how the implementation of differentiated learning by teachers in the classroom and its obstacles. The obstacles experienced by teachers in the practice of implementing differentiated learning include time management, knowledge support and class size. In addition, the support of the principal, organization, self-efficacy and the views of the teacher also affect the implementation of differentiated learning in the classroom.

The results of this study also highlight the effectiveness of differentiated learning in the classroom, the implementation of differentiated learning also depends on how the teacher understands the implementation of the learning. Research conducted by (Vantieghem et al., 2020) explains that differentiated learning constructs must be built based on active learning, clarity of learning, adaptive learning and flexible learning groupings.

In addition, the findings of this study also show that organizational leadership or school principals can influence the effectiveness of implementing differentiated learning by teachers. However, some research results also show that organizational and government support in the form of training is considered less effective and has

no effect on the implementation of differentiated learning in the classroom. Teachers have different perceptions of the concept of differentiated learning and this affects the practice of differentiated learning in class, for example research conducted by (Ismajli & Imami-Morina, 2018)) states that teachers pay more attention to products and pay less attention to content and process differentiation. Thus the form of implementation of differentiated learning is very dependent on how the teacher perceives the concept of differentiated learning, as well as the supports and obstacles that may be faced by the teacher in its implementation.

The Role of Differentiated Learning in Student Learning Activities

The results of studies related to the role of differentiated learning show a positive trend, namely the results of the research show that the implementation of differentiated learning in the classroom has an effect on learning in the classroom. Students like more differentiation in learning and students show a positive attitude during the implementation of differentiation learning

Differentiated learning activities are associated with improving academic and critical thinking abilities, math skills, reading and writing, increasing student involvement in science and technology learning activities, and increasing student active participation in class.

Differentiated learning is also associated with inclusive education practices, namely in research conducted by (Zafiri et al., 2019). The results of this study indicate that the application of differentiated learning has provided positive results for boys with autism, both in reading and writing.

From the results of the research that has been described above, it shows that differentiated learning practices with students as the main subject compare more the effectiveness of their implementation to the abilities or learning outcomes that can be achieved by students.

4. CONCLUSIONS

Most research related to differentiated learning was carried out in 2019 in the 2018-2022 period. The most widely used research method is the quantitative research method, with the subject being the teacher more dominant than the students. The research findings show that the teacher's view of differentiated learning influences its implementation in the classroom. Teachers have different concepts and understandings in the implementation of differentiated learning, the support of school leaders and relevant stakeholders is needed for the successful implementation of differentiated learning in the classroom. Differentiated learning in several aspects can improve students' learning abilities.

5. CONFLICT OF INTEREST

I declared there is no conflict of interest in this study

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