

## Differentiated Learning Innovation in Elementary Schools: A Nvivo Analysis of Combined Strategies

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Draft article history  
Submitted: 02-12-2024;  
Revised: 06-01-2025;  
Accepted: 06-01-2025;

**ABSTRACT:** Learning practices in elementary schools have not been able to improve the creativity of students fully. The diverse learning needs of learners are a challenge in realizing creative and critical learners. Implementing differentiated learning strategies is expected to meet the needs of diverse learners by adjusting content, processes, and products to their respective abilities and interests. The purpose of this research is to find the practice of differentiation as an innovation in learning in elementary schools. This research was conducted using qualitative methods in the form of case study type multiple case design. The use of this type is to compare variations and similarities in the implementation of differentiated learning practices from various schools. Five elementary schools were selected as the research context. The schools were selected based on the criteria of having the most students, the percentage of teacher qualifications, and the percentage of certified teachers. Thirty-two respondents provided research information. The respondents were certified teachers and had qualifications appropriate to the elementary school. Qualitative data analysis used Nvivo 12 software, and analysis using relevant research. The analysis steps were coding, categorization, matrix coding, and project map. This research found combined differentiated learning as a learning innovation according to the needs, talents, and interests of students. Learning is implemented by integrating varied learning resources and the use of learning digital media in learning community interaction. The implication of this research for elementary school teachers is to offer practical strategies to increase learners' creativity through diverse media and the selection of appropriate learning environments. This finding can strengthen previous research findings in the implementation of differentiated learning to create creative, critical, and passionate learners in learning.

**Keywords:** combined differentiated learning, based on learning on learners' needs, differentiated learning.

**ABSTRACT:** *Praktek pembelajaran pada sekolah dasar belum sepenuhnya dapat meningkatkan kreativitas peserta didik. Beragam kebutuhan belajar peserta didik menjadi tantangan dalam mewujudkan peserta didik yang kreatif dan kritis. Penerapan strategi pembelajaran diferensiasi diharapkan mampu memenuhi kebutuhan peserta didik yang beragam melalui penyesuaian konten, proses, dan produk dengan kemampuan dan minat masing-masing. Tujuan penelitian ini menemukan praktek diferensiasi sebagai inovasi dalam pembelajaran di Sekolah Dasar. Penelitian ini dilakukan dengan menggunakan metode kualitatif dalam bentuk studi kasus tipe multiple case design. Penggunaan tipe ini untuk membandingkan variasi dan kesamaan pelaksanaan praktik pembelajaran diferensiasi dari berbagai sekolah. Lima Sekolah Dasar dipilih sebagai konteks penelitian. Sekolah yang dipilih dengan kriteria Sekolah Dasar yang memiliki peserta didik terbanyak, persentase kualifikasi guru, dan persentase guru sertifikasi. Responden yang memberikan informasi penelitian sebanyak 32 orang. Responden tersebut merupakan guru-guru sertifikasi dan memiliki*

kualifikasi yang sesuai dengan Sekolah Dasar. Analisis data kualitatif menggunakan software Nvivo 12, dan analisis menggunakan penelitian yang relevan. Langkah analisisnya dengan melakukan coding, kategorisasi, matrix coding dan project map. Penelitian ini menemukan pembelajaran diferensiasi kombinasi sebagai inovasi pembelajaran sesuai dengan kebutuhan, bakat, dan minat peserta didik. Pembelajaran dilaksanakan dengan mengintegrasikan variasi sumber belajar dan penggunaan media digital dalam interaksi belajar kelompok. Implikasi penelitian ini bagi guru sekolah dasar menawarkan strategi praktis untuk meningkatkan kreativitas peserta didik melalui media yang beragam dan pemilihan lingkungan belajar yang sesuai. Temuan ini dapat memperkuat temuan penelitian terdahulu dalam pelaksanaan pembelajaran diferensiasi untuk menciptakan peserta didik yang kreatif, kritis, dan bersemangat dalam pembelajaran.

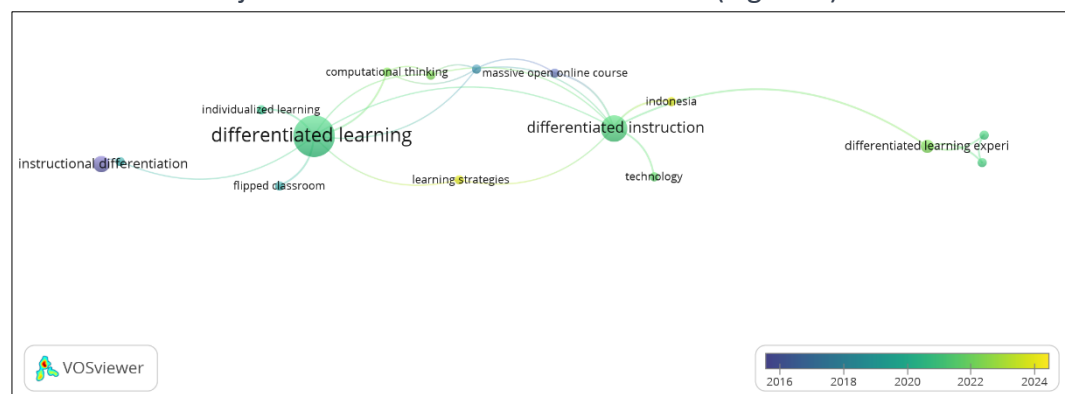
**Kata kunci:** belajar berdasarkan kebutuhan peserta didik, pembelajaran diferensiasi kombinasi, strategi diferensiasi.

## INTRODUCTION

Differentiated learning plays an important role in supporting the implementation of an independent curriculum by accommodating the diverse needs and learning styles of learners (Ibrahim & Haerudin, 2024; Satriadi dkk., 2024). Given the diverse needs, learners need to have individualized and differentiated learning opportunities (Lim & Park, 2022). Variants of learning styles consist of audio, visual, and kinesthetic (Adisjam & Saparia, 2023; Istika dkk., 2024; Hilman dkk., 2023). Therefore, in lesson planning, it becomes urgent for teachers to include differentiated learning strategies (Ndiung dkk., 2023; Jumiarti dkk., 2024). Differentiation organized in schools includes content, process, and product differentiation (Syifa dkk., 2024; Kusumaningpuri, 2024).

Nurturing students' learning needs and talents is a challenge for teachers in organizing differentiated learning (Fitri & Nani Solihati, 2023). Not all lesson schedules are conducive to learning. If the teacher teaches at a time that is not conducive, then this is a challenge for the teacher because there are not many learning strategies that are suitable for implementation. Increasing the discussion of effective differentiated learning practices can add practical guidance for teachers in managing learning. Thus, in any lesson schedule differentiated learning strategies can be applied (Rahmah dkk., 2022; Ferlianti dkk., 2022).

Using the Scopus database with the keywords "differentiated learning" OR "learning differentiates" OR "instructional differentiation", 59 articles were obtained. The subject area is limited to social sciences (Figure 1).



### Figure 1. Learning Differentiates

Figure 1 explains that differentiated learning has been discussed since 2016, but the discussion of differentiation is still new in Indonesia, especially related to the discussion of computation thinking and learning strategies.

Previous research has explained the effectiveness of differentiated learning in elementary schools. The application of differentiated learning can increase students' creativity, critical skills, and enthusiasm for learning (Saprudin, 2021). Increase students' learning motivation (Yuliani & Pujiastuti, 2023). Creating meaningful and enjoyable learning because it is designed according to the stage of development and achievement of diverse learners (Andari dkk., 2024). Helps learners increase their interest in learning (Laili, 2024). Differentiated learning is learner-centered learning (Miftafurohim dkk., 2023). However, the researchers also described teacher challenges in implementing differentiation strategies. Teacher challenges in differentiated learning include: i) the use of learning contracts in preparing teaching modules, ii) grouping students according to their interests and learning readiness, iii) classroom management with the implementation of differentiated strategies, and iv) assessment (Natalia, 2023; Istiyati dkk., 2024; Rani Yunita Putri, 2024). The study will be conducted to find solutions to teachers' challenges in managing learning with differentiation strategies to create fun learning and increase creativity.

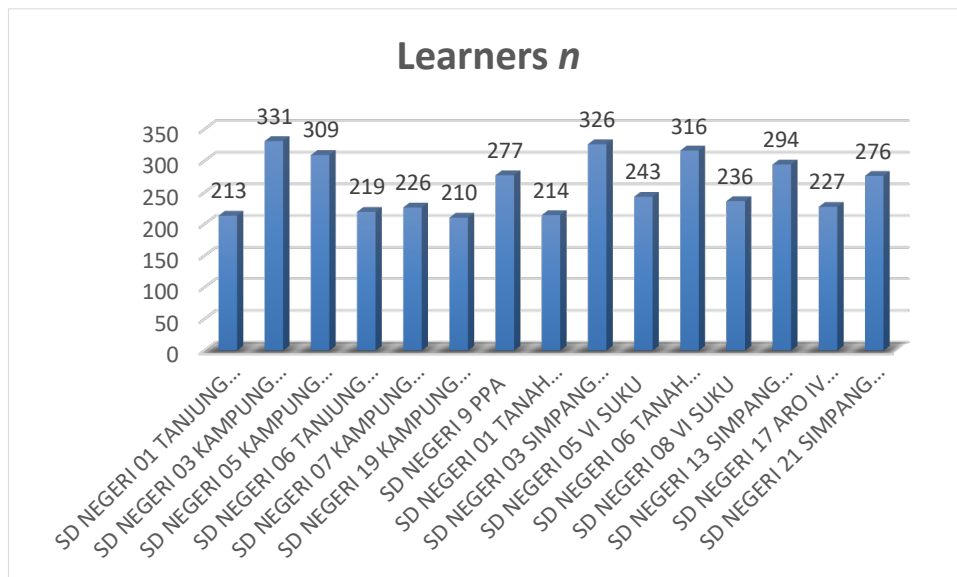
The discussion of differentiation practices can be a reference for teachers in carrying out their duties to accelerate the implementation of the independent curriculum (Rosa dkk., 2024). Therefore, learning strategies need to be carefully prepared so that the implementation of differentiated learning becomes an innovation in learning (Arofaturrohman dkk., 2023; Jasiah dkk., 2023; I Made Yadnya Tresna Putra, 2021). If teachers lack guidance in implementing differentiated learning, then teachers will teach according to conventional traditions and not be innovative (Alfurqan dkk., 2019). In addition, it is also an evaluation material for the practice of implementing learning by using differentiation strategies (Prastiyan dkk., 2023; Manalu dkk., 2023).

Although schools have diverse learner characteristics (Hadiyanto & Suyadi, 2023), the similarity of subjects can be a reference in adjusting differentiated learning strategies. This study aims to analyze the implementation of differentiated learning by teachers in elementary schools to increase students' creativity. This study serves as a practical guide for teachers in realizing innovative learning in the independent curriculum.

### RESEARCH METHOD

This research design uses multiple case designs (Yin, 2008). This type of case study was chosen to obtain a comparison of each context related to variants and similarities of the problems that occurred. The schools selected as research contexts were five elementary schools in Solok City, West Sumatra. The five elementary schools were selected based on the following criteria: i) the number of students, ii) the percentage of teacher qualifications, and iii) the percentage of

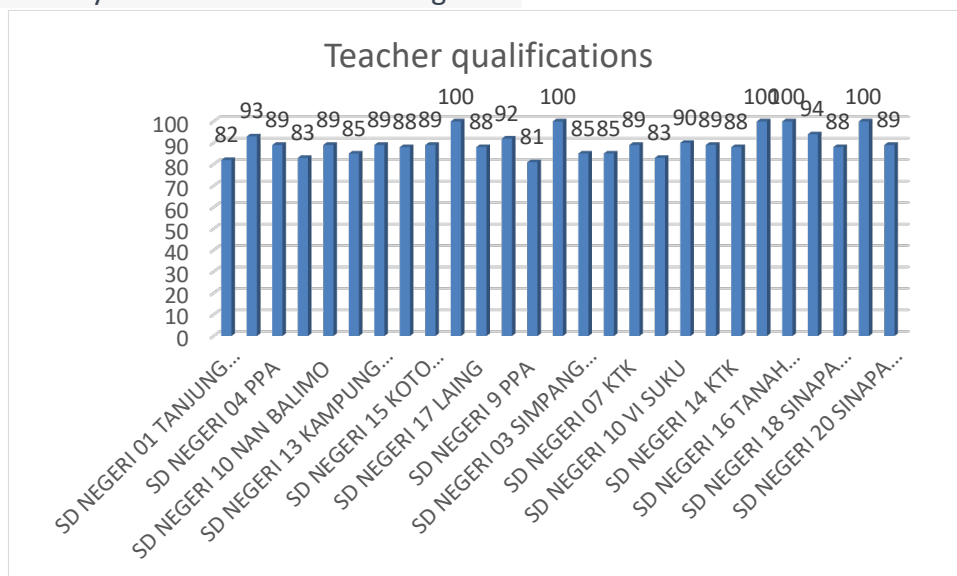
certified teachers. First, the criteria for the number of students in elementary schools in Solok City are presented in Figure 2.



**Figure 2.** Schools with the highest number of students

The schools selected as research locations are elementary schools that include fifteen schools that have more than 200 students, out of 23 public elementary schools in Solok City fifteen elementary schools have more than 200 students, as shown in Figure 2.

Secondly, the criteria for the percentage of qualified teachers teaching in elementary schools is described in Figure 3.

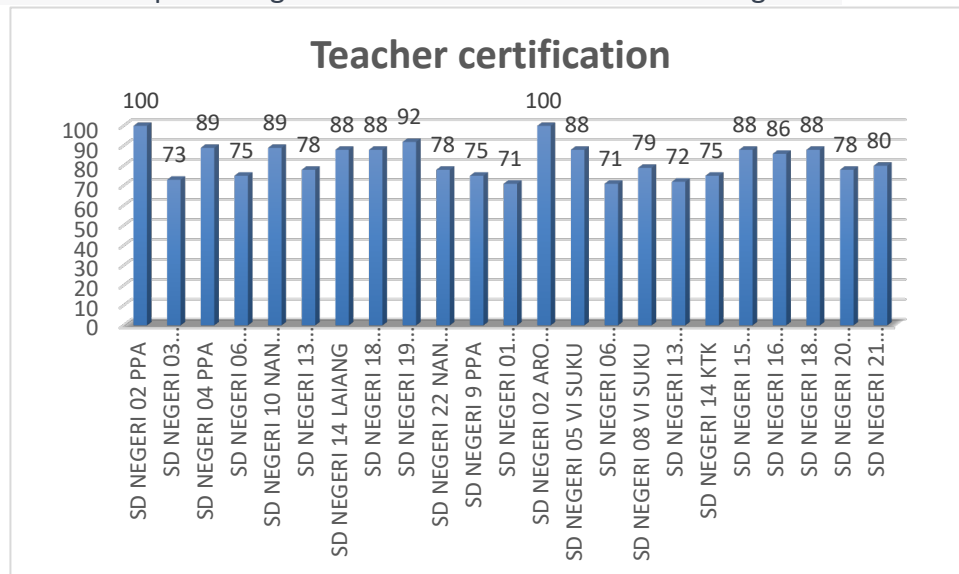


**Figure 3.** School with Teacher Qualifications

The selected elementary schools have teachers who are in line with elementary school qualifications. Teachers who teach in elementary schools have the qualifications of an elementary school teacher, and teachers of religious

studies, physical education and sports, and cultural arts. Twenty-seven elementary schools have a percentage of teachers' qualifications matching their field of work above 80 percent.

Third, the selection of elementary schools as research locations based on the criteria for the percentage of certified teachers is shown in Figure 4.



**Figure 4.** Schools with the highest percentage of certified teachers

There are 23 elementary schools with more than 70 percent of all teachers in each school certified. These schools also have the most certified teachers in Solok City. Five of these elementary schools served as the context for this study.

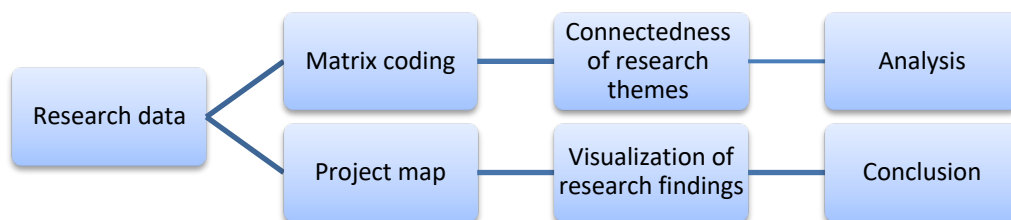
The data collection technique was conducted using open-ended interviews with 32 primary school teachers. The aspects observed related to the practice of differentiation in learning include learner grouping, use of learning media, selection of learning environment, and assessment. The description of the informants' positions is shown in Figure 5.



**Figure 5.** Classroom Teacher and Subject Teacher

Respondents who provided views related to differentiated learning practices consisted of subject teachers, PAI teachers, grade 1 teachers, grade 4 teachers, grade 6 teachers, and physical education and sports teachers. Respondents can provide valid information related to differentiated learning practices because they are teachers who have qualifications relevant to elementary schools and already have teaching certificates. In addition, document analysis of teaching modules prepared by teachers was also conducted. The evaluated elements are media type design, learning model, learning steps conducted by teachers, and assessment.

The data collected was analyzed using Nvivo 12 software. The analysis procedure is shown in Figure 6. The use of this software is to organize the themes of differentiated learning systematically through matrix coding so that the intersection of each category in differentiated learning is found. The project map menu in Nvivo can also facilitate the visualization of categories of differentiated learning practices in elementary schools. The connectedness of each category can be strengthened by the visualization of the project map.



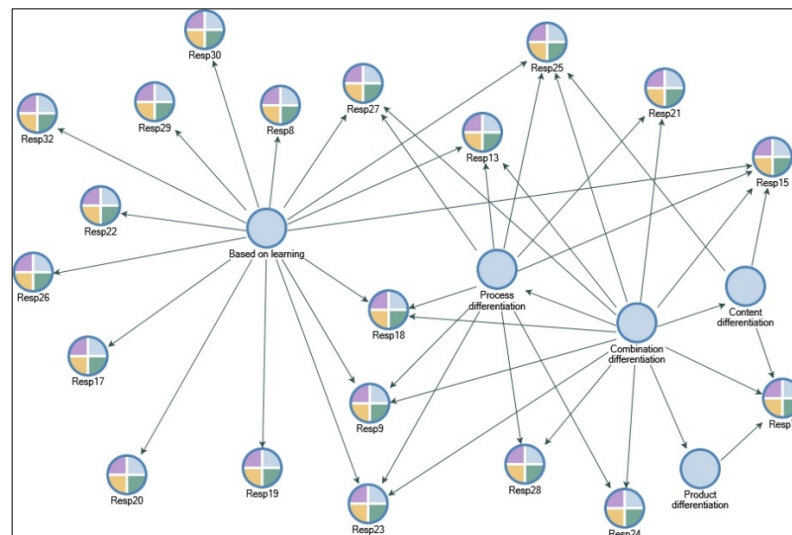
**Figure 6.** Qualitative Analysis with Nvivo 12

Data obtained by triangulating techniques were grouped in the form of themes and categories and then analyzed using matrix coding and project maps available on Nvivo software. Matrix coding was used to find the connectedness of the research themes. Themes and categories were visualized through project maps. Next, the results of the Nvivo visualization were connected to the learning theory of constructivism as the foundation of differentiated learning (Nerita dkk., 2023), and relevant research results related to the effectiveness of differentiated learning strategies (Saprudin, 2021; Yuliani & Pujiastuti, 2023). This step is to find the novelty of differentiated learning practices.

## RESULT AND DISCUSSION

The results of the field study related to differentiated learning in elementary schools found five common themes (Figure 4) discussed: 1) the basis of learning implementation; 2) combination differentiation; 3) content differentiation; 4) process differentiation, and 5) product differentiation.



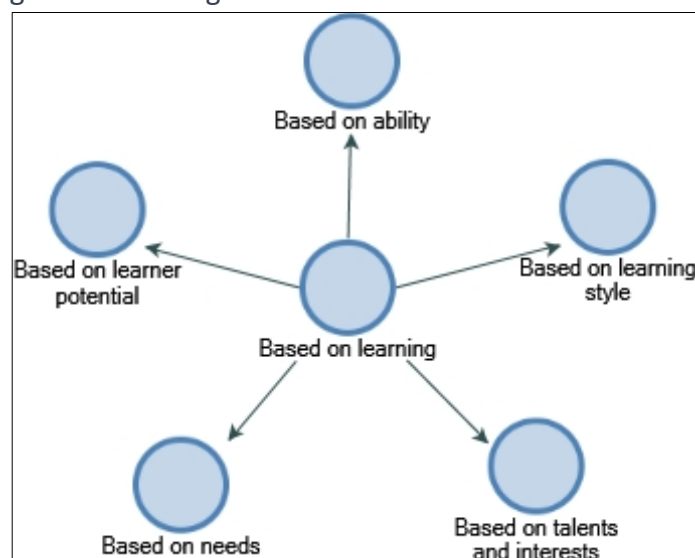


**Gambar 7.** Project Map Nvivo 12

Figure 7 above is derived from data analysis using Nvivo on differentiated learning practices in elementary schools. The theme of "based on learning" is a central theme in the discussion of differentiated learning. The results of the study also found that the type of learning organized in elementary schools in the form of differentiated learning includes a combination of content, process, and product. The content-process combination of differentiated learning was the most dominant response from respondents.

### Based on Learning

The emergence of differentiation strategies in learning has a foundation of learning that comes from the learners themselves (Andari dkk., 2024). The picture based on learning is shown in Figure 8.



**Figure 8.** Based on Learning

Figure 8 above explains the results of the study based on learning differentiation in elementary schools, which consists of five aspects: i) based on needs, ii) based on ability, ii) based on learning style, iii) based on learner potential, and iv) based on talents and interests. The theme “based on learning” is one that many teachers respond to because it is closely related to the learning strategies that teachers implement.

Differentiated learning applied by teachers is influenced by based on learning (Figure 9) sourced from learners.

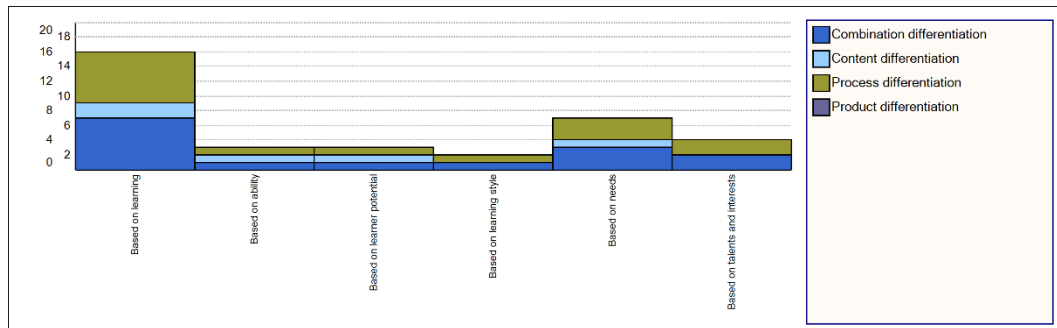


Figure 9. Based on learning

Figure 9 above explains the relationship between differentiated learning types and based on learning. The learning foundations that most influence differentiated learning are based on needs, based on talents, and interests. The aspect based on learning style is the component that least influences differentiation practices. About based on learning, the most common differentiation is combination and process differentiation. Thus, it can be said that the more varied the needs of learners, the higher the level of differentiation learning needs.

### Differentiated Learning

The results of the study found the form of differentiation strategies practiced by teachers in learning, as shown in Figure 10.

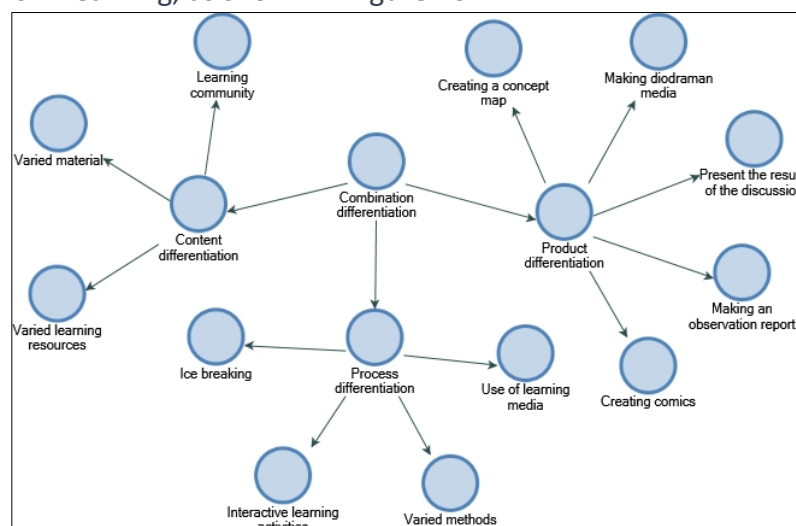


Figure 10. Learning differentiation theme

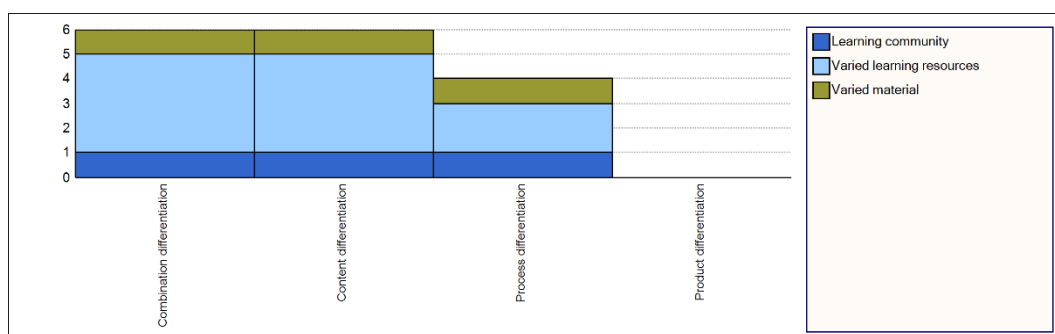


Figure 10 above explains the form of differentiation carried out by teachers in learning in the form of a combination, process, content, and product. Process differentiation has elements of activities that tend to be carried out by teachers in the form of ice breaking, use of learning media, interactive learning activities, and varied methods. Content differentiation, the elements of activities carried out by teachers are in the form of varied materials, diverse learning resources, and group learning. Product differentiation has elements of activities carried out by teachers in the form of making diorama media, presenting discussion results, making observation reports, making concept maps, and making comics. The use of content differentiation in learning will be followed by process and product differentiation. The use of several types of differentiation simultaneously in learning can be said to be a combination of differentiation.

Content differentiation is characterized by varied learning resources. In addition, differentiating the material refers to the learners' level of understanding (Cahyanto, 2021). Teachers provide learning by using diverse learning resources for learners' study groups, as described by the following respondents.

*“Children prefer to learn with videos shown on the InFocus. The school also has Chromebooks that are integrated with the learning ID (Resp.6)”. “Quizzes are used to learn differentiation (Resp. 3)”.*

The transcript above illustrates the learning resources used by teachers in learning in the form of learning videos, Chromebook media, and quizzes. This variety of learning resources is used in one learning activity. This learning model is a content differentiation learning practice. Learning resources become the determinant of learning. This can also be understood from Figure 11.



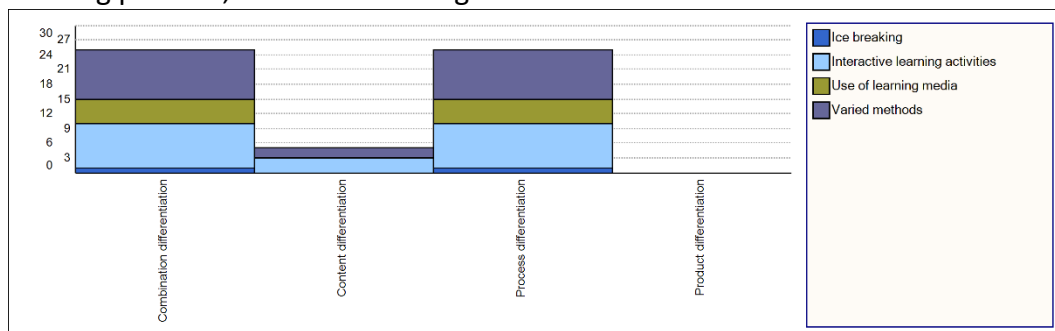
**Figure 11.** Activity content differentiation

In Figure 11, the activities that mark content differentiation consist of a learning community, varied learning resources, and varied materials. The most dominant activity carried out by teachers in the practice of content differentiation is the varied learning resources activity. The learning resources used are in the form of package books, support, Chromebooks, maps and globes, and Learner Worksheet books. Therefore, it can be said that the main feature of content differentiation is varied learning resources.

Differences in learning resources have an impact on the use of different learning methods and techniques for each group, this is called process differentiation (Anwar & Sukiman, 2023). As expressed by the following respondents.

*"Differentiation is done in the form of presentations, children's experiences (Resp.6)". "Differentiated learning is done in the form of learning outside the classroom. Learning numbers through nature in the school yard (Resp. 3)". "Visual differentiation learning has ice breaking. Number math learning using YouTube videos (Resp.4)". "Differentiation is brought to the environment outside the classroom. Pancasila subject uses InFocus for all materials (Resp.5)".*

The transcript above explains the variety of methods that teachers use in learning. The teacher uses the presentation method and direct experience (experiment). Teachers use learning in nature (inquiry) method and use hands-on experience (experiment). The teacher uses the ice-breaking method and YouTube videos. Teachers use learning-in-nature (inquiry) method and infocus slides. The use of various methods in one learning activity is an illustration of process differentiation learning practice, as also seen in Figure 12.



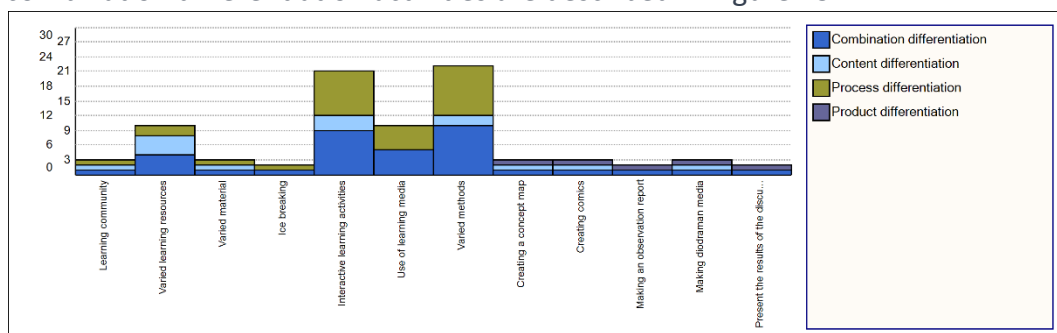
**Figure 12.** Activities of process differentiation

Figure 12 explains the four activities that many teachers do in the learning practice of process differentiation, namely ice breaking, interactive learning activities, use of learning media, and varied methods. Among these activities, interactive learning activities, varied methods, and the use of learning media are the most common. The use of learning media in learning process differentiation is in the form of word wall applications, posters, laptops, Canva media, music board media, video media, and projectors. Most of the media used in differentiation learning are digital media. Canva media is the main choice in digital media because Canva media can create other media used in learning such as posters, videos, and slides shown through projectors (Prawijaya dkk., 2022). If the sources are different and the methods also vary, then the learning products can also be different. As illustrated in the following respondent interview transcript.

*"Differentiated learning is learning that is done according to the learning needs of our students. I try to practice this in each of my learning activities, for*

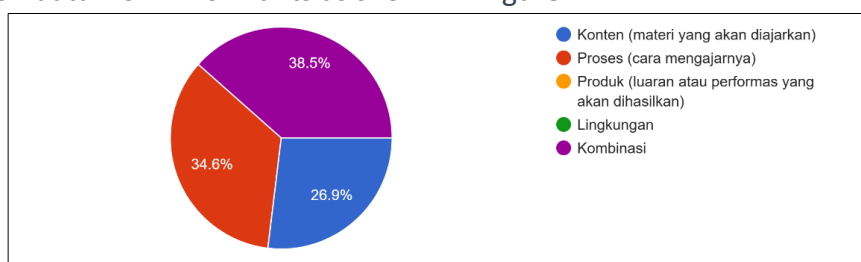
*example when teaching fine arts about Simple Comics, I use various methods and media in delivering the material (because my class has a variety of learning styles), such as demonstrating various images, learning videos, games and also the lecture method. In the process, I do differentiation, such as independent learning, group learning, guidance, and so on. In the product, the form of differentiation is in the selection of comic themes (pets, friends, family, etc.) (Resp. 17)".*

The transcript above describes the existence of group A with poster learning resources, material content identification methods, and projects, then the product can be a poster on the theme of pet comics. Group B with video learning resources, observation methods, and assignments, then the product is an observation report on the theme of friends. Group C with learning resources in the form of storybooks, independent reading, and discussion methods, the product is a mapping of family comic theme material. The differentiation practice of this model is a combination of differentiation of content, process, or product. Further combination differentiation activities are described in Figure 13.



**Figure 13.** Combination differentiation activities

Figure 13 describes the combination differentiation which is a collaboration of content-process, process-product, or content-product. The dominant activities seen consist of varied learning resources, interactive learning activities, use of learning media, and varied methods. These activities are derived from the two differentiations of content and process. Based on this data, it is understood that the combination differentiation pattern that has been practiced by teachers consists of a content process, while other combination differentiation patterns have not been seen empirically. Combination differentiation is the strategy most practiced by teachers in learning in elementary schools. This research finding is based on data from informants as shown in Figure 14.



**Figure 14.** Types of Differentiation

Figure 14 describes specifically the percentage of teachers who apply three types of differentiation in learning at elementary schools, namely: first, Content Differentiation: 26.9% of teachers choose to adapt the teaching materials to the needs of the learners. Second, Process differentiation: 34.6% of teachers adapt the teaching process based on learners' learning styles. Third, Combination differentiation: 38.5% of teachers chose a combination of content, process, product, and environment, making it the most popular approach among teachers. Based on the chart, the combination approach is the most chosen, indicating a strong effort from teachers to provide a more flexible and personalized learning experience for their learners.

## Discussion

Grouping learners according to their needs and learning styles differentiates differentiated learning from other learning strategies. Differentiated learning is based on the diverse learning needs, potential, learning styles, abilities, interests, and talents of learners. This model of learning is developed based on constructivist learning theory (Nerita dkk., 2023). Learners are grouped according to audio, visual, and kinesthetic learning styles (Setyo Adji Wahyudi dkk., 2023). Differentiated learning creates meaningful and enjoyable learning because it is designed according to the developmental stages and achievements of diverse learners (Andari dkk., 2024). In addition, differentiated practices in elementary schools can increase learners' motivation and interest in learning (Yuliani & Pujiastuti, 2023; Laili, 2024).

The selection of differentiated learning types carried out by teachers tends to be combined with differentiated learning. The main activities of combination differentiation consist of varied learning resources, interactive learning activities, the use of learning media, and varied methods. The variety of learning interactions in combination differentiation includes reading the text, listening to the singing of *hijaiyah* letters, practicing, searching for information, self-learning, and independent experience, listening to videos, and discussing them. These activities integrate problem-based learning and discovery learning activities in combination with differentiation (A. N. Utami & Subekti, 2024). The learning methods used in combination differentiation include group learning, question and answer (discussion), demonstration, games, and learning videos. The use of digital media canva characterises the learning of combination differentiation. Learning resources become an important activity in differentiation. Canva offers features such as presentations, posters, and visual content (Prawijaya dkk., 2022; Qumillaila dkk., 2022). The use of Canva digital media can accommodate a variety of learning resources.

Teachers can understand the learning needs and characteristics of the selected media and can optimize their use in learning (Budyono, 2020). Regarding digital media, the independent curriculum in education units provides space for digital use. This curriculum is prepared to face the era of society 5.0, where the demands of learning in this era are digital-based (Nandalawi & Achadi, 2023; Confrey dkk., 2018; Sulistyarini & Fatonah, 2022; Febriani & Ritonga, 2022). Thus,

the use of technology-based learning media is the right learning media for student learning in the millennial era (Zaim, 2020). In addition, teachers who can adjust the environment and learning objectives can also foster learners' curiosity and creativity (Kahmann dkk., 2024). Empirically, differentiated learning practices are proven to significantly improve learners' learning outcomes for all learning styles (S. Utami & Nurhadi, 2023).

In line with that, the novelty found in this research is the implementation of combined differentiation learning with a content-process pattern, which combines two types of differentiation in one integrated strategy. Core learning activities include a variety of learning resources, a variety of methods, the use of digital media, and interactive learning activities. Most teachers tend to use combination strategies to fulfill learners' learning needs in a more personalized and diverse way. In addition, technology integration such as the use of Canva in other digital media to attract learners' interest is an innovation that has not been widely applied before, especially in elementary schools in the regions.

Based on the description of the combined differentiated learning practices, the benefits of the implementation of combined differentiation can be revealed, namely: i) Flexibility, learners can choose the learning approach that best suits their style and interests, ii) Increased learning motivation, learners feel more motivated because they are given the freedom to choose the way and form of most comfortable learning products, iii) Personalised learning experience, each learner has the opportunity to get learning that is tailored to their individual needs, both in terms of materials, methods, and learning environment.

The successful implementation of differentiated learning strategies is determined by the teacher's proficiency in selecting learning resources, learning media, assessment techniques, and the learning environment. The implementation of differentiated learning in elementary schools is closely related to teachers' willingness and assessment activities for students (Kalinowski dkk., 2024). Teachers' ability to practice differentiation can be improved if they are trained in the use of digital media according to their subjects (Kahmann dkk., 2022). Therefore, using a combination differentiation strategy to improve learners' creativity, it is recommended that teachers use varied learning resources and are skilled in the use of digital media.

## CONCLUSION

The combined differentiated learning practiced by teachers in elementary schools is in the form of a content-process pattern. The main learning activities include varied learning resources, interactive learning activities, the use of learning media, and varied methods. Differentiated learning is based on learners' learning, which includes based on needs and based on talents and interests. Accommodating learners' needs in learning can create differentiated learning. Differentiated learning has activities using varied learning resources and the use of Canva-based digital learning media. This is to realize creative and innovative learners. The limitations of this research have not yet illustrated differentiated learning combinations with process-product or content-product patterns empirically. The implications of this research can be

a reference for teachers in implementing differentiated learning in elementary schools and supporting the implementation of an independent curriculum that is digital-based.

## ACKNOWLEDGMENT

Thanks to LP2M Universitas Negeri Padang for facilitating the process of this article so that it can be published in the Journal of Education and Teaching (JET). Thanks to the team who have contributed to the improvement of this article, to Miss Wirdati, Miss Rahmi Wiza, Mr Zilham, and Mr Ardi Satrial. This article can contribute to Islamic Religious Education courses, especially discussions related to the application of differentiated learning strategies in the implementation of an independent curriculum in educational institutions.

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