

Misconception tendency of differentiated instruction in publicly shared teaching and learning videos on youtube: A mixed-methods exploration study

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ABSTRACT

Differentiated instruction is a pedagogical approach in which teachers fulfill students' needs based on their interests and learning profiles. This paradigm is new to the Indonesian educational sector as the government of Indonesia introduced the Merdeka curriculum in 2022, which offers a new style of teaching and learning in Indonesia through differentiation in the classroom. As an unfamiliar approach, the recent practice of differentiated instruction may lead to a misconception, particularly in its implementation. This paper focuses on witnessing teachers' misconceptions regarding differentiated instruction in three major aspects: teacher-student relations, teacher-learning design, and teacher-learning goals, using a mixed method with an explanatory sequential design. The first phase includes video observation for qualitative data collection to build variables and obtain quantitative results. This research used a purposive sampling technique with a total of seventy-seven teaching and learning in Indonesian high school videos from YouTube with particular keywords related to differentiation. All the videos were uploaded on YouTube in 2022, ranging from January 2022 to December 2022, and were from various origins and subjects. The final result and interpretation show that the score of differentiated instruction implementation through the observation checklist was 0.4722, considered satisfactory. Furthermore, this study identifies three aspects of differentiation that need to be strengthened, including learning pace settings, giving oral feedback to students based on their needs, and responding proactively to diverse students. The recommendations for tackling misconceptions regarding differentiated instruction are given for better future implementation.

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INTRODUCTION

Differentiated instruction is a teaching approach that considers students' diversity and flexible classroom teaching (Karst et al., 2022). Tomlinson (1999) initiated the concept of flexible learning, known as differentiated instruction. Differentiated instruction is considered a pedagogical approach (Pozas et al., 2023) in which teachers play essential roles in fulfilling students' needs based on their interests and learning profiles (Yuen et al., 2022). Teacher responses can manifest as both practical and proactive actions, including a combination of flexible teaching methods (Zerai et al., 2021). Teachers can modify learning through content, process, or product (Tomlinson, 1999). As the twenty-first century began, the educational sector faced an increasing number of students' diversity (Du Plessis, 2019). However, for many years, Indonesia, as an archipelago country, has typically had a multicultural value from the different sources of philosophies, including religion, ethnicity, race, and culture (Jayadi et al., 2022). This paradigm has just appeared in the educational sector as the government of Indonesia introduced the Merdeka curriculum in 2022. This curriculum offers a new style of teaching and learning in the Indonesian educational sector by implementing differentiation in the classroom. Flexible

learning, as the main principle of the Merdeka curriculum, gives schools, teachers, and students the freedom to adapt to the learning process (BSKAP, 2022). This principle indicates that the Merdeka curriculum and differentiated instruction offer similarities in practice. Moreover, adapting instruction in the classroom becomes a crucial issue in the educational sector, specifically for addressing students' needs (Tetzlaff et al., 2022). Teachers must ensure no students are excluded from the differentiated classroom (Gibbs & McKay, 2021). Furthermore, the new paradigm of diversity of the students at school brings differentiated instruction into practice and is considered the new approach (Marks et al., 2021). This notion identifies the initial cause of the misconception among Indonesian teachers' practice in differentiation, as this approach seems unfamiliar to the teachers. In addition, teachers' misconceptions about differentiated instruction practices might be a huge obstacle (Putra, 2023), as teachers have to accept this practice into their daily habits (Coubergs et al., 2017).

Misconception identification is a crucial way to improve differentiated instruction practice in the classroom. Five main ideas of differentiated instruction must be investigated to identify misconceptions: dealing with students' diversity, adapting teaching strategies, varying learning activities, observing students' needs, and optimizing learning outcomes (Suprayogi et al., 2017). This paper argues that these ideas are regarding teachers' perspectives in the process differentiation stage, not content or product differentiation. This process differentiation stage is later divided into three aspects: teacher-student, teacher-learning design, and teacher-learning goals (Smets, 2017). The broader analysis is given in Table 1, which can be used for identifying differentiated instruction misconceptions during implementation.

Table 1. Analysis of Differentiated Instruction Dimensions

Stage	Suprayogi et al. (2017)	Smets (2017) - Perspective
Content	<ul style="list-style-type: none"> • Dealing with students' diversity • Varying learning activities 	<ul style="list-style-type: none"> • Teacher-student • Teacher-learning design
Process	<ul style="list-style-type: none"> • Dealing with students' diversity • Adapting teaching strategies • Varying learning activities • Observing students' needs 	<ul style="list-style-type: none"> • Teacher-student • Teacher-learning design • Teacher-learning goals
Product	<ul style="list-style-type: none"> • Optimizing learning outcome 	<ul style="list-style-type: none"> • Teacher-learning goals

Misconception in differentiated instruction is the biggest constraint for teachers to earn benefits from this practice (Putra, 2023). For instance, without flexible student grouping, teachers cannot trigger innovative learning (Gibbs & McKay, 2021). Despite this, there is a concern regarding teachers' skills to adjust curriculum while implementing differentiated instruction (De Jager, 2017). Differentiated instruction would give maximum attainment for students only if the teachers have overcome their misconceptions regarding differentiation (Pozas et al., 2021; Putra, 2023).

Rapid societal changes in the twenty-first century allow people to easily share their thoughts, innovations, and experiences on social media, including YouTube. In the educational sector, many teachers use YouTube platform to share their teaching and learning styles, including the practice of differentiated instruction in the classroom. Typically, as the government of Indonesia launched the Merdeka curriculum in early 2022, many videos regarding differentiated teaching and learning are found on YouTube. This practice may improve the educational sector by sharing and documenting knowledge (Oliver et al., 2018). Although video sharing through YouTube benefits educational sectors (Yacob & Saad, 2020), papers have yet to discuss the adverse effects of video sharing, which would trigger future complications in the educational sector. There is a demand for investigative research to examine

the process implementation of differentiated instruction (Haelersman, 2022). This research also investigates one research question: What is the common misconception about differentiated instruction practices done by Indonesian teachers? This paper aims to critically discuss and identify misconception tendencies in the differentiation process of differentiated instruction practices among Indonesian senior high school teachers. Further, this paper will consider the new way of teaching and learning video sharing for the Indonesian educational sector's future improvement.

RESEARCH METHOD

This study uses mixed methods with an explanatory sequential design (Creswell & Guetterman, 2019; Gall et al., 2010; Fraenkel et al., 2015). The first phase of this study includes video observation for qualitative data collection, and later, results from qualitative data will be used to build variables and obtain quantitative results.

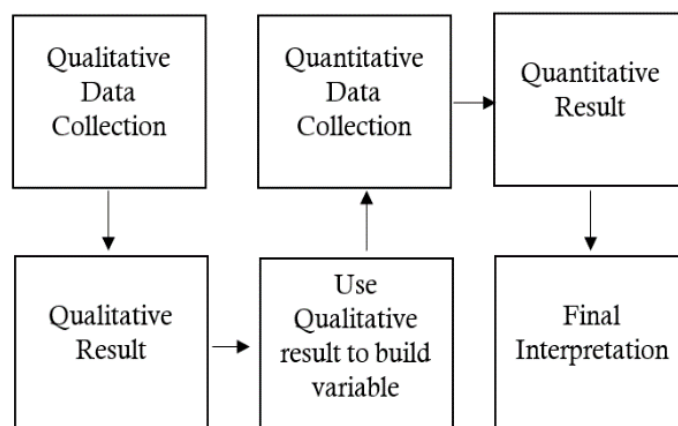


Figure 1. Explanatory Sequential Design (Creswell & Guetterman, 2019)

This research adopts a purposive sampling technique with a total of seventy-seven teaching and learning in Indonesian high school videos from YouTube with particular keywords and titles such as: “*differentiation*,” “*differentiated instruction*,” “*pembelajaran berdiferensiasi*,” “*instruksi individual*” and “*pembelajaran fleksibel*.” All the videos were uploaded on YouTube in 2022, ranging from January 2022 to December 2022. The origin of the videos varies from more than 20 provinces: Aceh, North Sumatra, Riau, Kepulauan Riau, South Sumatra, Bangka Belitung, Lampung, DKI Jakarta, West Java, Banten, Central Java, Yogyakarta, East Java, Bali, East Nusa Tenggara, West Kalimantan, Central Kalimantan, South Sulawesi, Central Sulawesi, North Sulawesi, West Sulawesi, Gorontalo, North Maluku, Papua, and West Papua. Through this purposive sampling, eleven subjects were captured: Art, Bahasa Indonesia, English language, mathematics, physics, chemistry, biology, sociology, history, economics, and geography. No information consent as YouTube video is available publicly, but all data will be confidential in order to respect the reputation of the teachers and organizations.

This research uses a video-based observation technique intended to analyze someone’s video as a part of research (Borg, 2021). This research observes the teachers’ practice in the process differentiation stage of differentiated instruction in the classroom. The checklist instrument is intended to convert qualitative data to quantitative interpretation. This research has twelve aspects of the modified instrument for identifying misconceptions in differentiated instruction (Smets, 2017). The details of the checklist instrument are presented in Table 2.

Table 2. Checklist Instrument for high quality differentiated instruction (Smets, 2017)

No.	Aspect Description	What to observe
A1	Shows interest for the students and relates to them with regard to their learning	Teacher adopts respectful attitude toward students (Smets, 2017)
A2	Installs a classroom culture where failure is possible	Teacher gives motivation to the students (Han & Yin, 2016)
A3	Work with total groups, individuals, and small groups.	Teacher monitors the work of students in the classroom (Reddy & Dudek, 2014)
A4	Adapts the teaching strategy depending on where students are in the learning process	Teacher responds to the students with proactive actions and considers the students' needs (Zerafi et al., 2021)
A5	Understand learning goals and know how to structure them toward complexity	Teacher sets learning goals for students to achieve (Fan, 2022)
A6	Provides students with insight into the learning path to follow	Teacher gives apperception to students (Puteri, L., 2018)
A7	Provides students with feedback on what has been learned and feedback for what still needs to be learned.	Teacher gives oral feedback to students, containing corrective information (Van der Kleij & Adie, 2020)
A8	Meet the diverse needs of learners.	Teacher applies intersubjectivity with the students (Smale-Jacobse et al., 2019)
A9	Uses a diversity of different teaching strategies	Teacher applies various instructions to different students (Chizhik & Chizhik, 2018)
A10	Uses flexible grouping depending on students' interests, learning profiles, and learning status	Teacher divides the student into several groups (Lindner et al., 2021)
A11	Provide time for students to actively process information.	Teacher alters the pace of learning (Heacox, 2012)
A12	Present students with choices in learning activities.	Teacher allows students to choose their own preferable activities (Coubergs et al., 2017)

This research used descriptive statistics to analyze the first obtained data from instruments, including ordinal data, comparison, and variability. The assessment will use two criteria: score 1 if the aspect appears during implementation, while score 0 will represent the absence of the aspect. Central tendency analysis will include the mean and mode analysis (Creswell & Guetterman, 2019).

Table 3. Central Tendency Criteria

Mean score	Description
0.81-1.00	Very good implementation
0.61-0.80	Good implementation
0.41-0.60	Satisfactory implementation
0.21-0.40	Less satisfactory implementation
0.00-0.20	Need more evaluation

Furthermore, an analysis from video observation will include the general description of observed data, such as classroom conditions and teachers' differentiated practice use in the classroom. The researcher ensures content validity through theoretical investigation using a valid instrument called high-quality differentiated instruction (Smets, 2017). Furthermore, the researcher uses an audit trail for reliability. An audit trail is a detailed methodology and decision to attain the result (Merriam, 2009; Punch, & Oancea, 2014).

FINDINGS AND DISCUSSION

General Result

Based on descriptive statistical results in Table 4, the total score of differentiated instruction implementation through the observation checklist was 0.4722, which is considered satisfactory implementation. Furthermore, three aspects need to be strengthened: A11 (Teacher alters the pace of learning), A4 (Teacher responds to the students with proactive actions and considers the students' needs), and A7 (Teacher gives oral feedback to students, containing corrective information). The low result of these aspects may be driven by several factors, such as a large number of students in one classroom and limited session time. Two aspects are considered perfect: A1 (Teacher adopts a respectful attitude towards students) and A10 (Teacher divides students into several groups). Standard deviation notes a huge disparity in teachers' perception of implementing differentiated instruction in the classroom.

Table 4. Average Score by Aspects

Aspects	N	Mean	Std. Dev
A1	77	1.0000	0.0000
A2	77	0.4935	0.5032
A3	77	0.5065	0.5032
A4	77	0.1039	0.3071
A5	77	0.5455	0.5011
A6	77	0.5844	0.4960
A7	77	0.1299	0.3383
A8	77	0.2597	0.4413
A9	77	0.5325	0.5022
A10	77	0.9091	0.2893
A11	77	0.0649	0.2480
A12	77	0.5325	0.5022
Summary		0.4722	

Interconnection Between Aspects

It is clear that from all aspects of differentiated instruction, teachers fulfill two aspects of differentiation at a very good level. First, the A1 aspect, *where the teacher shows interest in the students and relates to them about their learning*, appears to be the most excellent. This aspect is a significant teaching and learning basis for student engagement (Pedler et al., 2020). It also connects to the role of interest and interaction in learning, as interest gives a huge booster to learning (Harackiewicz et al., 2016). Second, in the A10 aspect, *the teacher divides the student into several groups*. Although some videos indicate that teachers separated the students based on random selection, most teachers attempted to create flexible student grouping. The cause behind this practice is the extensive narration of flexible grouping in the BSKAP's (2022) document. Furthermore, compared to the whole sample, some teachers separated students randomly. Thus, this small gap will be an obstacle to fulfilling students' needs if there is no future consideration for improvement, for instance, deepening the definition of flexible grouping regarding differentiated instruction. Success in the A1 and A10 aspects is the initial step toward future succession in differentiated instruction. Furthermore, this succession clues the connection between A1 and A10 aspects, as flexible grouping may increase student motivation (Gibbs & McKay, 2021).

Based on the observation, there are six aspects of differentiated instruction with high standard deviation: A2, A3, A5, A6, A9, and A12. This high deviation represents the huge disparity among teachers' practice and implicitly signs of a misconception in the practice of differentiation—for instance, in the A9 aspect, where *the teacher applies various instructions to different students*. Even though this aspect is prominently the core of differentiated instruction (Chizhik

& Chizhik, 2018), the teacher shows a different classroom practice during implementation. Given the most noticeable practice disparity, one teacher implemented differentiated instruction by designing various instructions to fulfill individual student's needs. In contrast, the others practiced differentiated instruction through a different single instruction in every meeting. The latter is not differentiated instruction practice because students receive similar instruction each session (Zerai et al., 2021; Nunley, 2006). In addition, the blunder in the A9 aspect also shows the connection to the A12 aspect in which *the teacher allows students to choose their own preferable activities*. In most observed practices, some teachers who did not fulfill the A9 aspect also failed to implement the A12 aspect and forced students to learn based on a single instruction. This also proves the interconnection between the criteria of differentiated instruction.

Another significant finding is that most teachers did not fulfill the A5 aspect, which mentions that *teachers set learning goals for students to achieve*. This finding indicates the possibility of future interruption in differentiated instruction practice if teachers dismiss to communicate learning objectives to the students as these objectives link to the assessment (Sewagegn, 2020). Failure to engage students during the learning process is also one of the results of undisclosed learning objectives and initial perceptions (Mitchell & Manzo, 2018). It is also prominent that failing to fulfill one aspect or more can lead to a less satisfactory scenario of differentiated instruction practice. Thus, there is a demand for local stakeholders (e.g., local government and the principal) to address this immense gap between aspects through professional learning to minimize the misconception and future interruption (Putra, 2023).

Moreover, this study implies three aspects need to be strengthened in the current practice of differentiation: A4 (*Teacher responds to the students with proactive actions and considers the students' needs*), A7 (*Teacher gives oral feedback to students, containing corrective information*), and A11, (*Teacher alters the pace of learning*). However, this study presumes that the large classroom size may cause this weak implementation of the A4, A7, and A11 aspects, as the previous study suggests that differentiated instruction fits a smaller classroom (Smit & Humpert, 2012). Fulfilling these aspects also needs more time to complete, so time limitation also provides a considerable obstacle (Aftab, 2015). Indeed, the demand for new policy initiative is the key point for policymakers in order to support teachers in implementing differentiated instruction to achieve sustainable education (Eikeland & Ohna, 2022).

Misconception Tendency and Future Demand

Through individual teacher's video scores, the result shown in Table 5 indicates that there are 7,8% of total videos considered as very good implementation, 14,29% good implementation, 48,05% satisfactory implementation, 24,68% less satisfactory implementation, and 6,50% need more evaluation. The median score of the total 77 videos was 0.42 (satisfactory implementation). This evaluation does not intend to judge or label teachers' practice in differentiated instruction, but it can provide more information for reflection and future improvement.

Table 5. Mean Video Score

Mean Score	Percentage of Total Videos	Description
0.08	2,60%	Need more evaluation
0.17	3,90%	Need more evaluation
0.25	12,99%	Less satisfactory implementation
0.33	11,69%	Less satisfactory implementation
0.42	19,48%	Satisfactory implementation

Mean Score	Percentage of Total Videos	Description
0.50	18,18%	Satisfactory implementation
0.58	9,09%	Satisfactory implementation
0.67	10,39%	Good implementation
0.75	3,90%	Good implementation
0.83	3,90%	Very good implementation
0.92	3,90%	Very good implementation

As mentioned in the previous section, this research also found the common misconception regarding differentiated instruction practice. In more specific cases, for example, the teacher gives the students the same instruction and assignment (working on the same assignment) each session. This practice is a misconception because, in differentiated instruction, the teacher may not give the student a similar assignment (Nunley, 2006). In addition, this phenomenon occurred due to a lack of time and preparation before implementing a differentiated classroom. (Gibbs & Beamish, 2021; Aftab, 2015). This notion gives a strong reason why some teachers did not fulfill some aspects of differentiation. Further, in critical circumstances, teachers set one or two learning objectives during a particular meeting but fail to associate the topics to fulfill students' needs. Thus, learning activities were conducted through different learning topics for different groups of students. This situation appears often in some videos. Teachers need to notice that differentiating content for learning does not mean that teachers need to give different topics to the students (Tomlinson, 1999; Tomlinson, 2014; Tomlinson, 2017; Heacox, 2012) as it may scatter some concepts. It is also important to acknowledge that the learning objectives will vary when the students are given different topics, as they will achieve different goals. Furthermore, another common finding is that teachers varied learning instruction for the whole class without individual separation. For instance, teachers presented slides and followed by watching a demonstration. This activity is not considered as differentiation because there is no variety of learning instruction among students (Nunley, 2006; Zerai et al., 2021). Differentiated instruction shall be for different students, depending on their needs.

Beyond the common misconception, notable findings have been observed in several videos where some teachers divide the students based on their readiness level. The benefit of this practice is that teachers will be more intense with students with low readiness levels, so differentiated instruction may give an equitable learning experience for all students (Tapper & Horsley, 2019). On the other hand, students with low readiness levels may feel defeated since this group division seems judgmental to students. Hence, teachers must ensure students' confidence to benefit from differentiated practice (Yüksel, 2012). Furthermore, some teachers introduced a peer-tutor system, in which students have a superior ability to lead their group. This peer-tutor system probably helps teachers monitor other students, so attaining learning objectives will be more effective during differentiated instruction implementation. However, teachers will be less attentive to students by using this system. Furthermore, this study addresses the recent misconception about differentiated instruction practice among Indonesian teachers. First, teachers need to reflect after teaching activities to see what to achieve and what to fix for the next move. Teacher reflection is the strongest practice to improve the quality of the educational sector (Sellars, 2012; Mathew et al., 2017; Suphasri & Chinokul, 2021). Second, the teacher-student ratio in the classroom needs to be reduced. As the purpose of DI is to meet all learners' needs, it seems impossible to tackle more than thirty students in one classroom (Smit & Humpert, 2012; Turner & Solis, 2017; Putra, 2023). Third, YouTube video validation is needed to ensure the quality of educational content as it is publicly available. Lastly, this research indicates a demand for teachers to be involved in a monthly professional development program

regarding DI process implementation for future improvement (Taylor, 2017; Ginja & Chen, 2020).

CONCLUSION

This study concludes that differentiated instruction practice seems uncommon to some teachers. Thus, resulting some misuses of differentiation in the classrooms. This finding also highlights the possible obstacles in implementing differentiated instruction, such as time limitation and large classroom size. Overall, there are three aspects of differentiation need to be strengthen including learning pace settings, giving oral feedback to students based on their needs, and responding proactively to diverse students. Later, with all respects, this research appreciates Indonesian teachers' efforts by sharing their differentiated instruction practice into social media although there is a space for future improvement for this practice.

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