Unveiling pre-service English teachers' perceptions of differentiated instruction

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Abstract: Implementing differentiated instruction (DI) has become imperative, particularly with its integration into the Kurikulum Merdeka in Indonesia. It is an approach that customizes instruction to cater to students' needs. This study aimed to unveil the general perceptions of pre-service English teachers regarding DI, explore their understanding and practices within the framework of DI, and identify challenges in its implementation. This study applied a quantitative approach with a survey research design with EFL pre-service teachers as the participants. The research employed a structured questionnaire as the primary instrument and substantiated each item through validation procedures, including Cronbach's alpha analysis. The findings showed a comprehensive overview of pre-service English teachers' general perspectives on DI that influence their practical application of related techniques. These insights contributed to a deeper understanding of the efficacy of DI and informed pedagogical practices, teacher preparation programs, and curriculum development. This research divulged the crucial role of pre-service English teachers' perceptions in implementing DI in teaching and learning contexts. Additionally, the study highlighted challenges pre-service teachers face, such as time constraints, limited resources, and large class sizes, emphasizing the need for collaborative efforts among stakeholders to address these challenges. The outcomes of this study were expected to inform related parties about the significance of tailored instruction in fostering effective and inclusive instruction environments to reach educational goals.

Keywords: *pre-service English teachers, perception, differentiated instruction*

INTRODUCTION

In the ever-evolving education landscape, an increasingly recognized imperative is to address students' diverse needs, backgrounds, and abilities. In response to that, differentiated instruction (DI) has emerged as a pedagogical approach representing a pivotal shift in the teaching and learning paradigm (Valiandes et al., 2018). Its significance transcends national boundaries and is prominently reflected in integrating DI into the *Kurikulum Merdeka* in Indonesia. As this transformative educational framework gains traction, it becomes crucial to delve into pre-service English teachers' perceptions, understanding, and practices concerning DI, as they are poised to play a pivotal role in its implementation in teaching and learning contexts (Nurhayati et al., 2017; Westbroek et al., 2020), especially in Indonesia.

Differentiated instruction, as articulated by Tomlinson (2001), is rooted in acknowledging the inherent diversity among learners and seeks to tailor instruction to facilitate these differences (Ndlovu, 2020). It operates on the premise that the one-size-fits-all pedagogy of

Sukarno, Riyadini, Jinabe et al. (2024)
doi.org/10.21831/diksi.v32i1.66720

Diksi

years ago is no longer tenable in an educational ecosystem characterized by a multitude of student socioeconomic, cultural linguistic backgrounds, abilities, interests, and learning styles. The implementation of *Kurikulum Merdeka* in Indonesia underscores the necessity of DI, aligning with the overarching goal of fostering inclusive and equitable education. Consequently, a profound exploration of pre-service English teachers' perceptions of DI becomes timely and paramount.

Despite the growing emphasis on implementing DI, a notable gap persists between the ideal and factual conditions within teaching and learning contexts in Indonesia. The ideal envisions teaching and learning contexts where educators adeptly customize their instruction to meet the diverse needs of students, resulting in enhanced learning outcomes and heightened engagement. However, this ideal often remains elusive in practice as teachers grapple with challenges in comprehending, implementing, and effectively managing DI strategies. Furthermore, there should be more empirical research focusing specifically on the perceptions of pre-service English teachers regarding DI within the Indonesian context, leaving a conspicuous void in our understanding of their readiness and capacity to embrace this transformative approach in reality.

Recent education research has increasingly accentuated the positive impact of DI on student achievement, motivation, and overall learning experiences (Hattie, 2012; Lavania & Nor, 2021; Magableh & Abdullah, 2020; Maulana et al., 2020; Smale-Jacobse et al., 2019). As DI is being promoted owing to those positive impacts, there is ever-increasing research addressing teachers' perspectives on DI (Al-Shaboul et al., 2021; Lavenex & Križić, 2022; Onyishi & Sefotho, 2020; Porta & Todd, 2022) as well as exploring their understanding and implementation of the approach (Al-Shaboul et al., 2021; Gibbs, 2023; Karimi & Nazari, 2021; Lindner et al., 2019; Suprayogi et al., 2017a; Whitley et al., 2019).

This research addresses the gap in understanding pre-service English teachers' readiness for Differentiated Instruction (DI) in Indonesia. It explores their perceptions, practical application, and challenges in implementing DI. By shedding light on this, the study informs stakeholders about the importance of tailored instruction for effective teaching. It also offers recommendations for improving teacher training programs to better prepare pre-service teachers for modern educational contexts.

In alignment with the established context, this research articulates overarching objective to unveil the general perceptions of pre-service English teachers regarding differentiated instruction. This comprehensive examination aspires to significantly contribute to the ongoing discourse surrounding the integration of differentiated instruction within the Indonesian educational landscape.

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METHOD

This study deployed quantitative approach with survey research design to gather quantitative information on pre-service English teachers' perspectives that affects practical application, and challenges concerning DI implementation. A questionnaire was distributed to a selected group of pre-service English teachers from a number of higher education institutions in Yogyakarta, Indonesia. The design of the questionnaire comprising 55 items was adapted from several previous validated instruments and research studies (Onyishi & Sefotho, 2020; Tom-Lawyer, 2014; C.A. Tomlinson, 1995) Each item aligns with the dimensions of DI, seeking to fulfill the study's research questions. There were 175 participants filling in the survey as the random sampling research subject. The teachers are either pursuing an undergraduate degree, a teacher training program, or a master's degree.

They possessed varied classroom experience during their teaching apprenticeship. The quantitative data analysis procedure proposed by Creswell and Creswell (2018) was followed to analyze the gathered data. The steps included (1) reporting the number of the sample, (2) checking for response bias, (3) providing a descriptive analysis for all independent and dependent variables, (4) identifying the research results utilizing statistical procedures, (5) conducting Cronbach's Alpha analysis to validate the research results using statistical computer program namely IBM SPSS Statistics 2.3, and (6) presenting the result in tables or figures and interpret the results.

RESULTS AND DISCUSSION
Results

The study included 175 pre-service English teachers who contributed to it. Most are female pre-service English teachers with around a year of classroom experience. More than 90% of respondents hold a bachelor's degree or above. They also teach at various levels of education, with the bulk of them (33.8%) working in higher education and informal institutions. The research has eight dimensions concerning the DI theory. Those dimensions are classified into particular aspects, as follows.

Table 1. Dimensions Classifications

No	Dimension	Sub-Dimension
a	General perceptions	1) pre-service teachers' general knowledge of DI,
b	Understanding and practical application of differentiated instruction techniques in teaching receptive skills	2) pre-service teachers' practice concerning students' readiness, 3) pre-service teachers' practice concerning students' learning profile, 4) pre-service teachers' practice concerning learning environment, 5) pre-service teachers' practice concerning content, 6) pre-service teachers' practice concerning process and product, z 7) pre-service teachers' practice on DI assessment

Sukarno, Riyadini, Jinabe et al. (2024)
doi.org/10.21831/diksi.v32i1.66720

DiKSi

c	Challenges in implementing differentiated instruction in teaching receptive skills	8) pre-service teachers' challenges in DI implementation.

General perceptions

The first dimension highlights the pre-service English teachers' general comprehension of DI in teaching receptive skills. The trend indicates a strong belief in DI as a prominent element of the listening and reading teaching and learning process. In that way, the participants of this study were aware of the importance of DI in learning activities and procedures for understanding the subject. Therefore, the pre-service English teachers primarily implemented DI in the classroom, but few (around 25%) need to start to implement DI in the classroom. Surprisingly, more than 60% of the pre-service teachers are confident in their ability to prepare, plan, and design differentiated instruction in their classes. However, more than 60 respondents require further DI implementation training. Around 30 participants were required to learn how to alter and present information based on the various needs of the students. As a result, they are well-versed in relevant assessments/projects for demonstrating pupils' mastery of learning based on varied backgrounds. Furthermore, they saw DI as a teacher's reaction to students' needs, guided by broad principles based on students' interests, preferences, strengths, and challenges. They also understand that DI has three components: content, process, and product. The chart also shows that all respondents agreed with DI's purpose of assisting students in interpreting their progress and growing according to their abilities, talents, and interests using a variety of tactics and activities.

All in all, the statistical data gathered proposed a conclusion in which the majority of the research's participants believe that DI implementation in the classroom is essential. It is also proved by most of the pre-service teachers who implement the DI in their teaching and learning process. In addition, although most of them were confident of their ability in instilling DI in their teaching, they still need a deeper understanding regarding DI implementation as what it really is.

Understanding and practical application of DI techniques in teaching receptive skills

This part reveals the pre-service English teachers' understanding and practical application of DI techniques to teach receptive skills. Thus, to unveil those aspects, this section comprises six dimensions as elaborated in the table above.

In the dimension concerning students' readiness, more than 150 participants agreed that the students have significantly different knowledge.

Their background knowledge strongly affects their academic performance. Therefore, pre-service English teachers' apprehension regarding these aspects affected their teaching content and teaching method.

The next dimension is the practice towards students' learning profiles. The data captured pre-service teachers' points of view concerning the students' various learning modality preferences. Over 90% of the participants were aware of students' diverse learning modalities. This led to the thinking of a strong correlation between the students' learning modalities and their course performance. The idea then influenced the way pre-service English teachers teach and what to teach to the students. Moreover, the participants also believe that the students have work grouping preferences which affects the teaching and learning process.

This study also revealed pre-service English teachers' practice aligned with the learning environment. The participants tried their best to make sure every student felt recognized, accepted, and respected. As one of the pre-service English teachers' endeavors, they provide themselves approachable for the students. Moreover, they make sure that the students could consistently equally participate in the teaching and learning process in the classroom. In addition, the participants attempted to boost students' attitude in concern to the engagement motivation towards the teaching content.

Furthermore, the survey results indicated that most pre-service English teachers had facilitated differentiation through content. More than 85% of them had attempted to supply materials in different formats and with various difficulty levels. They also aimed to address students' differing interests and experiences by presenting texts that reflect those variances. The examples given while discussing the learning materials were tailored to the students' interests and experiences as well. Moreover, to help with the understanding and the retention of the materials, more than 150 participants had used various strategies. Regarding the challenges that might be encountered by students in grasping the provided materials, they also offered additional resources.

Apart from differentiation in the content, differentiation in the process and the product had also been widely implemented by the participants of the study. Most of them provided activities that promote interaction between students during their apprenticeship. In doing so, over 80% of them attempted to use different grouping strategies. One of the strategies is grouping the students based on their learning modalities, which had been done by three-quarters of the cohort. Furthermore, a little over 90% of the participants also aimed at catering to students' various interests by allowing them to choose their desired topics. Additionally, in case of difficulties in accomplishing tasks, nearly all of the teachers provided supplementary support for the students.

Meanwhile, concerning assessment, DI was apparent in the diagnostic assessment as well as in the formative and summative assessments.

Sukarno, Riyadini, Jinabe et al. (2024)
doi.org/10.21831/diksi.v32i1.66720

DIKSI

Although a few cohorts admitted to have not tapped on students' diverse readiness levels, interests, and learning profiles while conducting diagnostic assessment, practically 90% of them had evaluated those three aspects in preparing the lessons. Besides, over three quarters of the pre-service teachers employed more than three forms of assessment, before deciding on the students' final grades. The students' learning progress in one semester was also taken into consideration by the majority of the participants.

To sum up, the pre-service English teachers involved in the present research were arguably aware of the correlation between students' backgrounds and how they performed academically. That awareness affected the teachers' selection of the materials and the way they delivered those materials. As a result, they implemented DI in many aspects of the teaching and learning process, including the content, the process, the product, and the assessment. Nevertheless, a number of participants had not been able to do so. It was seemingly due to some challenges, which will be addressed in the next section.

Challenges in implementing DI in teaching receptive skills

This section elaborates the study respondents' judgment towards DI implementation challenges in teaching receptive skills. There are challenges faced by the pre-service English teachers during the DI implementation in the classroom: (1) limited time, (2) limited classroom space to design such seating arrangement, (3) big numbers of students in a class, (4) hard to find teaching materials align with DI, and (5) difficulties in understanding students' background including prior knowledge and learning strategies.

It was revealed that one of the most apparent challenges is related to time constraints. Lessons with DI are typically well-structured and require a lot of time to plan and deliver. Thus, nearly 90% of pre-service teachers believed that limited time hindered them from incorporating DI in their classrooms.

The next challenges are associated with the classroom size and the number of the students. Around 70% of participants presumed that limited classroom space is not ideal to conduct DI. Applying DI often requires students to be seated in a specific arrangement, such as in groups or a semicircle, when they complete the various tasks given. This can be hard to achieve in a restricted space. Besides, the pre-service teachers also thought that a big number of students in a classroom can make it difficult to implement DI effectively. Providing individualized attention to each student in a large class can be burdensome.

In addition, finding the right materials for DI is still a problem for at least 60% of the pre-service teachers. They found that there is limited material source served for implementing DI in the classroom, which accommodates learners' different learning backgrounds. Last but not least, understanding students' backgrounds, including their prior knowledge and learning strategies, is still considered tough by some pre-service English teachers.

Sukarno, Riyadini, Jinabe et al. (2024)
doi.org/10.21831/diksi.v32i1.66720

DiKSi

Generally, the challenges in implementing DI might come from many aspects, such as the available resources and the parties involved. In regard to these, some potential ways of dealing with those challenges will be presented in the discussion section.

Discussion

The preceding elaboration was generated using data from 175 participants who had been investigated. They made use of the g-form to complete a questionnaire. Each item's questionnaire was run via SPSS 2.3 software to determine the validity of each item. There is one item (number 1) among 55 that has Sig. 0.126, which is greater than 0.05, indicating that the item is invalid. In other words, almost all of the items are valid with Sig. 0.000.

The research also used SPSS 2.3 software with the Cronbach Alpha test to examine the data's reliability. The statistics projected that all of the dimensions in this study have a scale greater than (>) 0.6. It indicates that all of the data collected in all dimensions is trustworthy. As a result, this study's findings are linked to the existing theory and expressed in the following parts.

General perceptions

This part shed light on the findings of the examination of the implication and significance of the pre-service English teachers' comprehension regarding DI implementation in the classroom. The findings elaboration could be broken down into: the importance of DI, the pre-service teachers' confidence in implementing DI, their need for further DI implementation training, and also their understanding towards DI implementation purposes.

The pre-service English teachers are concerned about the idea that the students could not be given a one-size-fits-all approach. The teacher should design such tailored instruction to accommodate students' diverse learning which is aligned with the DI principles (C.A Tomlinson, 2017). The majority of the respondents' comprehension is parallel with the DI's core aim of accommodating specific student needs while building a more inclusive and student-centered learning environment.

From the data gathered and presented in the findings section, pre-service English teachers have a firm understanding about the importance of DI implementation in the teaching and learning process. They are well-equipped with the knowledge of DI principles. This participants' strong belief develops their confidence in planning and designing the DI implementation. Although the real implementation of DI in the field is quite challenging (Letzel et al., 2023; van Geel et al., 2019), most of the teachers are keen on its benefit for the students' learning (Godor, 2021; Suprayogi et al., 2017b).

However, most of the pre-service English teachers might have a lack of practical skills even though they are accommodated with sufficient

Sukarno, Riyadini, Jinabe et al. (2024)
doi.org/10.21831/diksi.v32i1.66720

Diksi

knowledge regarding DI implementation in the classroom. This gap occurs since most of the participants had a year teaching experience only. It is in line with a research conducted by Suprayogi and friends in 2017 (Suprayogi et al., 2017b) in which the implementation is high although it is below a critical benchmark. It could be significantly influenced by the pre-service teachers' DI self-efficacy views, greater constructivist attitudes, larger class size and also institution's support (Whitley et al., 2019; Zelalem et al., 2022).

In conclusion, the pre-service English teachers are aware of the importance of implementing DI in the classroom. However, they might have lack of practical knowledge since their short teaching experience. Therefore, further training will be a good alternative solution to the problem (Nychkalo et al., 2020).

Understanding and practical application of DI in teaching receptive skills

This section discusses further about pre-service teachers' understanding and practices of DI in teaching receptive skills. As elaborated in the findings, most participants are already aware that students' readiness and learning profile vary. In terms of the receptive skills learning environment, it is believed that the safe and welcoming ones in which students feel respected and accepted is among the cores of DI implementation(As Sabiq, 2018; Melesse & Belay, 2022; C. . Tomlinson, 2017). Hence, the fact that the participants have tried to provide tasks that enable positive interaction among students and make themselves approachable for students indicates that they have implemented another pillar of DI.

Generally, differentiation can be performed through three ways; the "what" (content), the "how", and the "evidence" of instruction (Taylor, 2015). Differentiating content is found to be crucial by Melesse and Belay (2022) as it has a stronger direct influence on process differentiation. As suggested by many scholars (Harmer, 2009; Taylor, 2015) differentiating content can be done by giving students different materials suited to their needs (Riyadi & Sugirin, 2018). In line with that, the pre-service teachers reported that they have provided materials in different formats and with various difficulty levels. They also tailored the materials to the students' interest and experience. Presenting materials in different formats would accommodate students with different learning styles. As elaborated by Abella et al. (2022) and Riandi (2022), suiting the way materials presented to students' styles can potentially foster knowledge immersion as their senses are better stimulated. Additionally, adjusting the difficulty levels of the materials is indeed necessary as it is inevitable that teachers will face students with different readiness and background knowledge in a classroom.

In relation to the "how" and the "evidence" of instruction, the pre-service teachers have performed differentiation in several ways, one of which is using different grouping strategies (Brain & Investigasi, 2014). In fact, grouping strategies can be a means of differentiation. It is aligned with

Sukarno, Riyadini, Jinabe et al. (2024)
doi.org/10.21831/diksi.v32i1.66720

DiKSi

what (Taylor, 2015) has experienced and promoted during her service as a teacher educator. Various grouping strategies can be used to differentiate both, process and product. By considering students' learning modalities and interests, teachers can assign different tasks to different groups (Harmer, 2009)or allow a different form of assessments/projects (Taylor, 2015) to be submitted at the end of the learning process.

Last but not least, assessment is crucial in differentiation. Before making decisions about the instruction, a diagnostic assessment is needed as it will inform the teachers about the students' strengths and weaknesses (Kim, 2015). Given that most pre-service teachers involved in this study have tried to recognize students' diverse readiness level, interests, and learning profiles, it can be said that they have performed a diagnostic assessment in their practices (Westbroek et al., 2020). Beside a diagnostic assessment, formative assessment and summative assessment are pivotal in DI (Moon, 2005; C. A. Tomlinson & Moon, 2014). In regard to that, the participants have reported that they do not rely on a single assessment to measure students' achievement. Instead, they used several forms of assignment. In other words, they have employed all kinds of assessment necessary in DI, namely diagnostic assessment, formative assessment, and summative assessment.

All in all, most pre-service teachers involved in this study had implemented DI in many aspects of the teaching and learning process. However, it should be noted that the pre-service teachers' practices of DI discussed in this study are self-reported. Thus, further study, such as in the form of observations, might be needed to examine the actual implementation.

Pre-service English teachers' challenges in implementing DI

DI is a complex practice; thus, it is bound to some challenges. Even experienced teachers in countries with more established education systems like South Korea and the Netherlands struggle in its implementation (Maulana et al., 2020; Smets & Struyven, 2020). Gaitas and Martins (2017), who conducted a study involving hundreds of novice and experienced teachers, identified five dimensions of teachers' perceived difficulties regarding DI as mentioned before. The present study confirms that pre-service teachers also deal with challenges that fall into some of those dimensions. However, the order of the perceived difficulty levels is different. Instead of activities and materials, the participants found management the most challenging aspect, specifically in relation to time management due to the time allocated for the lesson or the ability of the teachers in making effective use of it. It is true that a longer duration of a lesson cannot guarantee the success of the teaching and learning process. Nevertheless, DI implementation in classrooms might demand more time (Suprayogi et al., 2017a). It is possible that teachers found it difficult to fit the necessary personalized instructions into the allocated time. Aside from time spent in classrooms, DI can be time-consuming on the teachers' side as it requires mindful planning (Joseph et al., 2013). As

Sukarno, Riyadini, Jinabe et al. (2024)
doi.org/10.21831/diksi.v32i1.66720

DIKSI

an initial step to work on time management, it is advisable for pre-service teachers to take the preparation time to develop a well-organized lesson plan. They can also learn to break down DI lessons into smaller chunks that can be delivered over multiple meetings.

The second most apparent challenges, namely classroom size and the number of students, seem to be related to both the dimension of management and classroom environment. Indeed, it is very common for Indonesian schools to have more than thirty students in a classroom. Some argue that class size or student-teacher ratio is not necessarily the main determiner of the education quality (Dincer & Uysal, 2010; Koc & Celik, 2015). Even so, smaller classes are regarded as advantageous since teachers can pay more close attention to students' individual needs and work more effectively (Koc & Celik, 2015; OECD, 2014). Lower student-teacher ratio also allows more physical space in classrooms. It is found that an adequate physical space allows a wide range of activities that can engage students and promote interactions. Unfortunately, there are layers to these problems. While hiring more teachers or expanding classroom sizes will involve many authorities, including the government, and might not be quickly feasible, teachers can turn the challenges into opportunities. They can take advantage of the class size to promote cooperative learning strategies, which empower students to work together and support each other (Bosch, 2017). It is also suggested that teachers learn to use their classroom space more effectively by designing flexible seating arrangements adapted to different learning activities (Alterator & Deed, 2013; Kariippanon et al., 2018). Using technology to create virtual learning spaces is another potential strategy.

In addition, finding the right materials for DI can be complicated for teachers, even for those who have served for a long period. In a preceding study involving in-service teachers with up to 30 years of experience, it was revealed that selecting appropriate materials is seen as the most demanding task in implementing DI (Gaitas & Alves Martins, 2017). It is unsurprising that the participants of this research, who are pre-service teachers with, mostly, less than 5 years of apprenticeship experience encountered the same challenge. As a matter of fact, *Kurikulum Merdeka* is characterized by its flexibility (Chevalier, 2011) that leads to teachers' freedom in terms of material selection. They are allowed to adopt and adapt materials deemed necessary, or develop their own learning materials. Nonetheless, as revealed by Glas et al., (2003), providing learning materials that are accommodating for students of diverse backgrounds can be toilsome. Moreover, providing teacher-made learning materials may take a longer process and require a more advanced set of skills. While experimenting on it, pre-service teachers can adapt existing materials to meet the students' needs. In this case, available online materials can be one of the supplementary sources.

Finally, a little over half of the pre-service teachers still struggle with identifying students' characteristics. These include students' background

Sukarno, Riyadini, Jinabe et al. (2024)
doi.org/10.21831/diksi.v32i1.66720

DIKSI

knowledge, learning strategies, and other aspects influencing their learning (Donche et al., 2013; Narciss et al., 2014). This phenomenon should be paid attention to as understanding students' diversity is at the heart of DI (Smets & Struyven, 2020). Indeed, according to Harmer (2009), practicing DI entirely to address students' differences might be extremely difficult under some circumstances. Still, teachers should strive to dig detailed information about their students as it will help them to formulate appropriate teaching strategies and achieve the desired learning goals effectively (Astuti et al., 2019). To begin with, teachers can assess their students' prior knowledge and learning strategies through a diagnostic assessment. In general, diagnostic assessment has been widely used to provide education stakeholders with information regarding students' strengths and weaknesses (Kim, 2015). Then, during the lesson, teachers can also employ formative assessments to monitor students' progress and adjust their instruction accordingly. After all, teachers need to be acquainted with diverse teaching and assessment strategies to facilitate heterogeneous students (Smets & Struyven, 2018).

CONCLUSION

The study sheds light on the significance of Differentiated Instruction (DI) in accommodating diverse learner needs, encompassing learning styles, talents, interests, and backgrounds. Pre-service English teachers emerge as pivotal agents of ineffective DI implementation, notwithstanding encountered challenges such as time constraints, resource scarcity, and large class sizes. Collaboration among educational stakeholders, policymakers, and pre-service teachers is crucial to surmount these challenges. Stakeholders must formulate supportive policies and programs, while policymakers should allocate resources for professional development and classroom adaptations. Pre-service teachers, recognizing the need for further training, should seek avenues to enhance their DI implementation skills.

Moreover, the study underscores the imperative for teacher preparation programs to integrate DI theories and practices into their curriculum. Providing integrated subject matter materials and mentorship opportunities from experienced practitioners is vital. This research contributes significantly to comprehending DI efficacy and informs pedagogical practices, teacher training, and curriculum development to foster inclusive and effective learning environments.

The findings revealed that pre-service English teachers firmly believe in the importance of DI, albeit with varying degrees of confidence in their implementation skills. While many feel confident in planning and designing DI, a substantial portion acknowledges the need for further training to deepen their understanding and practical application of DI. Challenges such as time constraints, limited resources, and large class sizes hinder seamless DI integration. However, proactive measures, including time management strategies and flexible classroom arrangements, can mitigate these challenges.

Sukarno, Riyadini, Jinabe et al. (2024)
doi.org/10.21831/diksi.v32i1.66720

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Furthermore, efforts to tailor teaching materials and understand students' diverse backgrounds are imperative for effective DI implementation. This underscores the need for ongoing professional development and support for pre-service teachers to navigate the complexities of DI effectively.

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