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A Pedagogical Critique of Learning Practices That Ignore Diagnostic Assessment Results for Student Learning Types

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Abstract: This literature review critically examines teaching practices that ignore diagnostic assessment results for student learning types. The study analyzed 20 research articles to identify the current state of diagnostic assessment implementation in differentiated learning, the pedagogical impacts of neglecting diagnostic assessment results, and conceptual recommendations for optimizing the integration of assessment results in differentiated instruction. The findings reveal varying stages of teachers' conceptual understanding and implementation skills, with a significant gap between theoretical knowledge and practical application. Neglecting diagnostic assessment results negatively impacts learning effectiveness, motivation, and student achievement. Diagnostic assessment serves as the foundation for differentiated learning by mapping students' learning readiness, interests, and learning style profiles. The study recommends developing adaptive learning media that systematically integrate diagnostic assessment results into differentiated instructional strategies. This innovative approach has the potential to enhance the effectiveness, efficiency, and equity of learning while supporting the vision of student-centered education in the Merdeka Belajar (Freedom to Learn) curriculum. The study contributes to the theoretical understanding of the relationship between diagnostic assessment and differentiated instruction and offers practical directions for future educational practices oriented towards individual learners' needs.

Keywords: Diagnostic Assessments, Differentiated Learning, Student Learning Styles

A. Introduction

Diagnostic assessment plays a fundamental role in the learning process because it serves to identify students' prior abilities, characteristics, and learning needs before the learning activities begin. (Fransiskus Ganeza Sutomo & Mifda Rasida Quratul Aini, 2024) Understanding the characteristics of students offers many benefits for students, teachers, and schools. It also allows learning to be tailored to the needs, interests, and abilities of students, thereby increasing motivation, self-confidence, and learning outcomes (Hendro Yulius Suryo Putra et al., 2023). This kind of diagnostic assessment offers many advantages in enhancing the learning process for students, so

the teacher's skills as an educator are highly necessary (Tri Sedya Febrianti & Robiatun Nisa, 2025). The purpose of diagnostic assessment is to identify students' abilities, strengths, and weaknesses. The results of this assessment serve as a guide for teachers in designing learning strategies that are suited to the learning needs of each student. This way, teachers can adapt learning activities to students' competencies and characteristics and make necessary adjustments. In their research show that differentiation learning strategies focused on activities have proven effective in increasing students' motivation and achievement (Rohmah & Zulfitria, 2024).

Additionally, the Ministry of Education, Culture, Research, and Technology (Kemdikbudristek, 2022) n the Guide to the Implementation of Diagnostic Assessment, emphasizes that this assessment not only measures prior knowledge but also covers the students' social, emotional, and motivational aspects. Thus, diagnostic assessment serves as the basis for student-centered learning and becomes an integral part of efforts to realize fair and inclusive education.

Pedagogically, diagnostic assessment helps teachers play the role of reflective learning designers, not merely conveyors of material. Through a deep understanding of student characteristics, teachers can create adaptive learning environments, humanize educational relationships, and foster independence and responsibility in students' learning (Dayana et al., 2022). A person's learning style is a combination of how they absorb, organize, and process information. In the context of differentiated learning, understanding students' learning styles is essential so that teachers can adjust strategies, media, and learning activities according to each student's needs and learning style. Learning that adapts to students' learning styles has been proven to increase engagement, motivation, and learning outcomes (Putri et al., n.d.). Learning styles can influence students' academic achievement. Children can develop better if they develop strategies suited to their learning style. Therefore, recognizing types of learning styles becomes an important foundation for teachers in designing inclusive, student-centered learning (Seffi & Perseveranda, 2025). The causes of constraints in implementing differentiated learning are the suboptimal conduction of diagnostic assessments to map out students' learning needs and limited teacher training and understanding of students' learning needs and the concept of differentiated learning.

In practice, many teachers have conducted diagnostic assessments as part of the initial learning process, but the results have not been optimally utilized in the planning and implementation of learning strategies. Diagnostic assessments are often carried out merely as administrative formalities without any meaningful follow-up based on the identification of prior abilities, learning difficulties, or students' learning styles. As a result, the learning strategies implemented tend to be uniform and do not consider the differing learning needs of the students.

Neglecting the results of diagnostic assessment in learning practice has significant pedagogical impacts on students' learning effectiveness. When teachers do not use assessment data to adjust learning strategies, the learning process becomes less relevant to students' abilities, needs, and learning styles. As stated by (Fahriani & Karkono, 2024) through differentiated learning strategies, learning becomes more interesting and enjoyable because it focuses more on the students. Learning that was previously monotonous becomes more interactive. Students are increasingly motivated to be actively involved in learning. Therefore, if the learning process ignores the assessment results, it can lead to low motivation, engagement, and learning outcomes, because learning does not start from the appropriate starting point for the students' condition. Moreover, teachers lose the opportunity to provide appropriate interventions for students who are struggling or need enrichment.

This condition underlines the importance of critical study of learning practices that ignore the results of diagnostic assessment. Such analysis is needed to assess to what extent such practices impact the quality of learning, and how pedagogical strategies can be improved to be more student-centered. Thus, the findings can serve as a foundation for devising learning models or media that are more adaptive, differentiated, and grounded in assessment data.

This research stems from the problem that the diagnostic assessments carried out by teachers have not been fully utilized in planning differentiated learning strategies. Assessment results often become mere formalities without real follow-up to students' learning needs and characteristics, thereby potentially reducing learning effectiveness. Therefore, this study aims to examine and answer the questions: (1) How do previous studies describe the implementation of diagnostic assessment in differentiated learning? (2) What pedagogical impacts have been identified in various studies regarding the neglect of diagnostic assessment results on students' effectiveness, motivation, and learning outcomes? and (3) What conceptual recommendations emerge from the literature review to optimize the integration of diagnostic assessment results into differentiated learning? This research is expected to provide conceptual understanding and practical recommendations for teachers in integrating the results of diagnostic assessments into more adaptive, student-centered, and equitable learning.

B. Methods

This research is a literature study (library research) that adopts a literature review approach to critically analyze teaching practices that disregard the results of diagnostic assessments on students' learning types. This approach was chosen because it enables researchers to examine and synthesize various research findings and relevant pedagogical theories in order to build a strong conceptual argument (Snyder, 2019). he research data comes from secondary literature in the form of

scientific journals, academic books, research reports, and educational policy documents discussing diagnostic assessment, learning types, and differentiated instruction. Literature was searched through various databases such as Google Scholar using keywords like Barriers to implementing Diagnostic Assessment results, Challenges in implementing diagnostic assessment of learning styles, and differentiated learning. The criteria for the literature used include publications from the last ten years and relevance to the research focus. This is especially important for researchers who plan to use data in the form of text, images, and sound in their research (Stemler, 2015). With the rapid growth of digital data, content analysis has transformed from a specialized technique into an essential tool in the era of "big data".

Hence, the collected data was analyzed using content analysis techniques with a thematic approach to identify main themes, gaps between theory and practice, and to construct a pedagogical critique of the implementation of diagnostic assessments that have not yet been optimally integrated into the learning process. The instrument used in this research is a content analysis guide adopted from (Susetyarini & Fauzi, 2020) which includes the aspects being observed (Table 1). There are six main aspects examined in the content analysis of this research, namely: (1) type of research; (2) research subjects; (3) research data analysis techniques; and (4) research findings.

Table 1. Aspects and Categories Used in Content Analysis in the Research

Aspects	Categories	
Types of research (2a)	A.1-R and D A.2-CAR	A.3-Qualitative Research A4-Quantitative Research
Types of quantitative research (2b)	B.1-Observation Studies (OS) B.2-Correlational Research (CR) B.3-Survey Research (SR) B.4-Pre-Experimental Designs (PED)	B.5-True Experimental Designs (TED) B.6-Quasi-Experimental Designs (QED) B.7-Ex Post Facto Designs (EPFD)
Research subject	C.1-VII Grade JHS students C.2- VIII Grade JHS students C.3-IX Grade JHS students C.4-X Grade SHS students C.5-XI Grade SHS students C.6-XII Grade SHS students	C.7-Undergraduate students C.8-Postgraduadate students C.9-JHS teacher C.10-SHS teacher C.11-lecturer
Data collection instruments	D.1-questionnaire sheet D.2-observation sheet D.3-test sheet	D.4-interview sheet D.5-unidentified
Data analysis methods	E.1-mean E.2-percentage E.3-N-gain E.4-t-test E.5-ANOVA	E.6-ANCOVA E.7- Correlation E.8-Unidentified E.9-Others

Data analysis was carried out by classifying each article into specific categories based on aspects that correspond to the predetermined categories. The classification decisions were based on information provided by the authors in the abstract, methods, and discussion sections. Subsequently, the collected data was presented in the form of a bar chart. The results of data analysis obtained from various literature sources were then compiled and presented by the researchers in the form of a research report. This

report includes the main findings supported by data and relevant literature reviews, thus providing a comprehensive and in-depth overview of the studied topic.

C. Results and Discussion

A review was conducted of 20 journals that reveal the implementation of the results of diagnostic assessment in learning, using journals with various research types, as shown in Diagram 1 below.

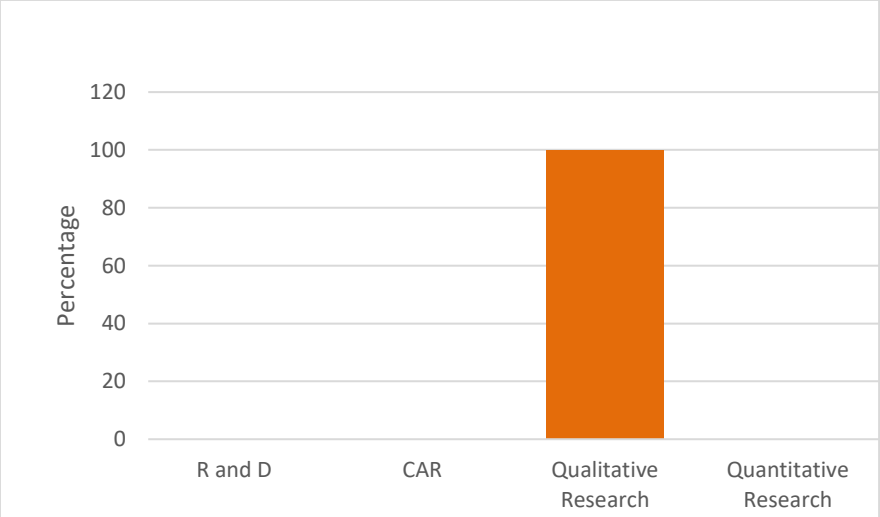

Figure 1. Distribution of Research Types from the Journal Review Results

From figure 1, it was found that qualitative research dominates the journals reviewed. This shows that the researchers place greater emphasis on a deep understanding of phenomena, experiences, or perceptions related to the research topic, rather than merely measuring variables quantitatively. This finding may also reflect that available quantitative data is still limited or inadequate to answer certain research questions within the studied topic. This provides direction for further research, for instance, to combine qualitative and quantitative methods so that the results obtained are more comprehensive. In addition to the research types, the subjects of the studies from the 20 journals reviewed are also distributed across 8 different subject categories, including Elementary School Teachers, Students and Teachers in Elementary School, Students, Teachers and Elementary School Principals, Junior High School Students, Junior High School Teachers, Students and Teachers in Senior High School, Vocational High School Teachers, and Literature Subjects for literature review studies. This distribution can be seen in figure 2 below.

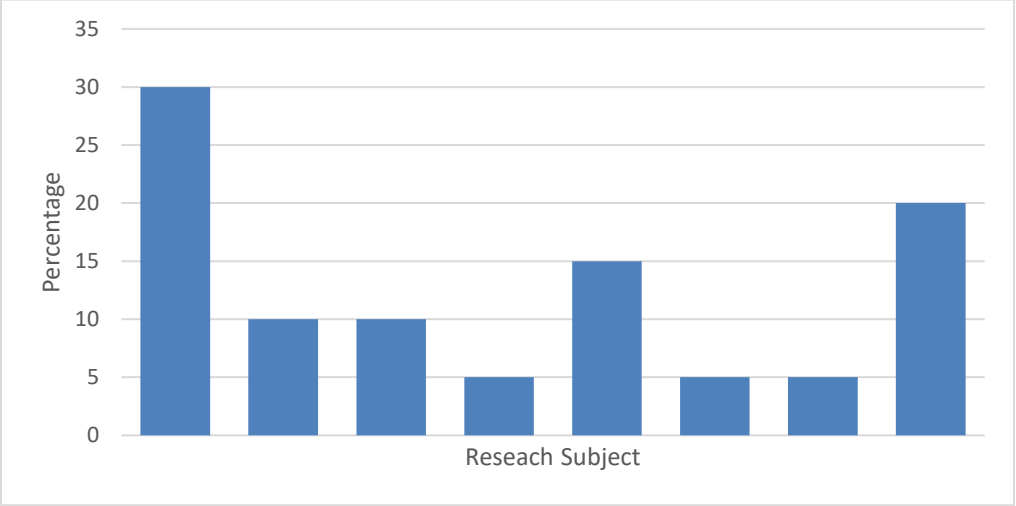

Figure 2. Distribution of Research Subjects from the Journal Review Results

From figure 2, it is known that, in general, research on diagnostic assessment and its implementation in differentiated learning is more often conducted at the elementary education level, particularly in Elementary Schools. This indicates that researchers' and educational practitioners' attention toward implementing diagnostic assessment is still focused on the early stages of students' learning development, where mapping basic abilities and learning needs is considered very important to support an effective learning process.

Meanwhile, at the secondary education level, such as Senior and Vocational High Schools, research related to diagnostic assessment is still very limited. This situation indicates that implementing diagnostic assessment at the secondary level has not yet become a top priority or is not fully understood as an integral part of differentiated instruction. In fact, diagnostic assessment at this level has great potential to help teachers understand learning readiness, interests, and more complex student profiles, so that teaching strategies can be optimally adjusted to the characteristics of the learners. Therefore, increased attention and further research are needed at the Senior and Vocational High School levels so that the implementation of diagnostic assessment can be evenly distributed across all education levels and support the achievement of high-quality differentiated learning at each school level.

Overview of the Implementation of Diagnostic Assessment in Differentiated Learning Based on Previous Research Findings

Based on the review of 20 analysed journals, researchers found that the state of implementation of diagnostic assessment in differentiated learning is categorized into four main categories. These four categories are illustrated in Diagram 3 below.

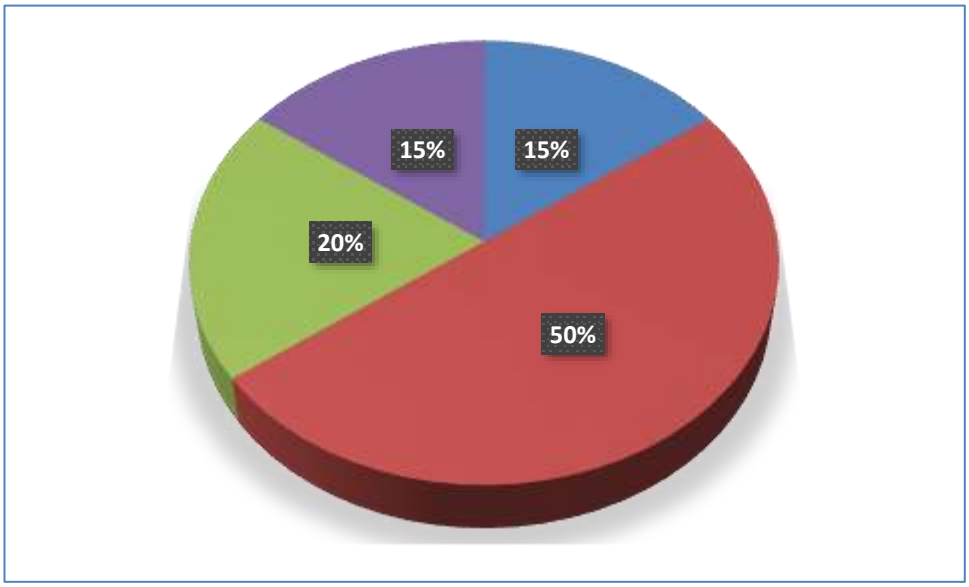

Figure 3. Overview of Diagnostic Assessment and Its Implementation in Differentiated Learning

From figure 3, it is found that teachers, in conducting diagnostic assessments and implementing them in differentiated learning, can be categorized into four (4) categories:

a. Teachers who have understood the concept of diagnostic assessment as well as differentiated instruction and are able to implement the results of diagnostic assessments into the learning process without facing obstacles remain very few in number—only 15%. Although this number is still relatively small, it demonstrates a commitment from teachers, as reflected in several research findings. For example, the research by Wulan et al. found that among students who were given diagnostic assessments but did not receive special guidance tailored to their learning styles, 36% were able to understand the material well, as indicated by scores above the Minimum Mastery Criteria (KKM). Students in this group were able to learn independently without requiring special intervention. However, 64% of students scored below the KKM, indicating they still need guidance and special attention from teachers. This need should be adjusted according to each student's learning style visual, auditory, or kinesthetic—so that the guidance strategies provided are more effective and can help students understand the material in line with their unique learning characteristics (Wulan et al., 2024) (Arief Mushoffa Gymnastiar, 2024). The results of this study indicate that implementing differentiation strategies in the areas of content, process, and product enables teachers to create a more inclusive and supportive learning environment, which in turn can enhance students' motivation and learning outcomes.

Jumiarti's research reveals that the application of differentiated instruction in History subjects at SMAN 23 Tangerang Regency has proven to be highly effective. This is evident from the implementation stages, which begin with an initial student assessment, followed by the core activities involving differentiation of content, process, and product, and concluding with the closing stage. Teachers demonstrated innovation in adapting learning to the diversity of students, including developing learning modules independently and making optimal use of available resources, such as using gadgets as learning media even though school facilities are limited. (Jumiarti et al., 2024)

This condition indicates that although some teachers already possess good conceptual understanding and practical skills, their commitment to optimally implementing diagnostic assessment remains limited. The low percentage suggests that diagnostic assessment-based teaching practice has not yet become an ingrained teaching culture among teachers.

Academically, this may be caused by factors such as a lack of in-depth training, minimal supervision of implementation in the field, as well as limited time for teachers to follow up on assessment results by differentiating instruction. Therefore, systematic efforts are needed to expand understanding and practice of diagnostic assessment through ongoing professional training so that differentiated instruction can be implemented more effectively and equitably across various education levels.

b. Teachers who already understand the concept of diagnostic assessment and differentiated instruction and are able to implement the results of diagnostic assessment into the teaching process, but still face a number of challenges, represent a fairly large percentage, at 50%. The following research journals provide an overview of the challenges faced by teachers in implementing diagnostic assessment in differentiated instruction. The research by Wantiana et al. reveals that the challenge for teachers in implementing the Merdeka curriculum is that teachers are still confused about which learning media are suitable for teaching students. Nevertheless, teachers are always striving to facilitate learning using interesting media and teaching materials in their classrooms (Wantiana & Mellisa, 2023).

   Syukur et al., in their research, revealed that teachers have implemented the results of diagnostic assessments through differentiated learning. However, during interviews, some teachers expressed that they need more digital resources and additional training to optimize the implementation of differentiated learning methods (Syukur & Zahir, n.d.) (Fauzia & Hadikusuma Ramadan, 2023). The obstacles in differentiated learning are that teachers experience some difficulty adjusting to students' individual characteristics during lessons. However, this is

not a cause for concern among teachers; instead, it serves as motivation for them to improve throughout the learning process.

The research findings by Jannah et al. revealed that teachers already have a fairly good understanding of diagnostic assessment, including its conceptual aspects, objectives, and timing of implementation. Teachers also recognize the importance of this assessment as a tool to identify students' learning needs and to design appropriate learning strategies. Nevertheless, in practice, the application of diagnostic assessment still faces several challenges, such as difficulties in developing assessment materials, formulating questions in simple language, mapping assessment results, and limited implementation time (Jannah et al., 2024) (Sunario Tanggur, 2023) Teachers face challenges in meeting students' individual learning needs because they are required to deliver different materials to each student simultaneously. Moreover, the predetermined learning schedule set by the school restricts teachers' flexibility in conducting diagnostic assessments and learning activities. Teachers also struggle to determine the most suitable methods to facilitate learning according to each student's needs (Soleh Ibrahim et all, n.d.) Interview results show that there are still teachers who do not fully understand the learning concepts stipulated in the Merdeka Curriculum.

Research by Nur Hasanah et al. shows that fourth-grade students have three types of learning styles: visual, auditory, and kinesthetic. Based on this mapping, teachers design lessons that are incorporated into teaching modules. After implementing differentiated instruction, teachers conduct evaluations and reflections on its application. The differentiated learning strategy is applied in three forms: differentiation of content, process, and product. Content differentiation is carried out by presenting material through learning media tailored to students' learning styles. Process differentiation relates to how teachers deliver material using various teaching methods appropriate to students' learning styles, without changing the substance or learning objectives. Meanwhile, product differentiation provides students with the freedom to create works based on their learning processes, so that each group produces different outcomes. Nevertheless, the implementation of differentiated instruction also faces challenges, such as limited time, resources, and teachers' abilities to manage the classroom (Nur Hasanah, 2024) (Alan Mustapa et. all., 2025).

Based on the discussion of the three instructional approaches in the Merdeka Curriculum, it can be concluded that the implementation of the three approaches namely understanding by design, differentiated instruction, and deep learning is still not evenly applied among teachers. The orientation of learning, which previously emphasized mastery of material at each educational level, has now shifted to focus on student learning outcomes. In particular, the application of differentiated instruction is considered fairly good. Research results indicate that

this approach can improve the learning process and enhance learning outcomes at various educational levels in Indonesia. However, its implementation has not been optimal because teachers' understanding of differentiated instruction is still mostly conceptual, without fully integrating all its components into teaching practice (Nur Fatimatuz Zahro, 2022).

The differentiated learning approach has proven effective in improving the critical thinking skills of elementary school students. However, this research also shows various obstacles in its implementation, especially related to the limited time and resources available to teachers. Many teachers experience difficulties in preparing varied learning materials and adjusting teaching strategies to the individual needs of each student (Damayanti et al., 2023). In implementing differentiated instruction, teachers need to have a deep understanding of its objectives so that all student learning needs can be met. This should take into account three aspects student readiness, interests, and learning profiles. By understanding these, teachers can design instruction involving three components of differentiation: content, process, and product. Teachers strive to adapt materials to each student's characteristics and learning styles. In addition, teachers can also participate in training on the use of digital applications to help speed up and simplify the delivery of varied materials in accordance with students' needs.

This condition indicates that, in fact, most teachers already have an awareness and theoretical understanding of the importance of diagnostic assessment as the basis for designing differentiated instruction, but its implementation in the field is not yet fully optimal. Common challenges include selecting and utilizing adaptive learning media. Teachers are often confused about choosing the right media to teach students according to their learning styles, even though they continue to try to facilitate learning with engaging teaching materials. Limitations in digital resources, the need for additional training, as well as difficulties in preparing assessment materials, formulating simple questions, adjusting teaching strategies to students' characteristics, and managing instructional time are significant obstacles in the practice of differentiated instruction. These findings emphasize that adaptive learning media are urgently needed to help teachers overcome challenges related to varied materials, time constraints, and classroom management, while also facilitating more effective diagnostic assessment. With appropriate media support, teachers can more easily adjust teaching strategies to meet students' individual needs, improve the quality of learning interaction, and optimize the application of differentiated instruction. Therefore, the provision of adequate digital resources, ongoing professional training, and school policies that support the use of adaptive media become crucial steps to enhance the effectiveness of instruction and diagnostic assessment.

c. Teachers who have understood the concept of diagnostic assessment as well as differentiated instruction, but have not yet been able to implement the results of diagnostic assessments into the learning process and still face several challenges, show a percentage that is not too large, namely 20%. However, this situation still requires serious attention because it indicates a gap between teachers' conceptual understanding and their practical skills in classroom instruction. Academically, this phenomenon suggests that teachers' knowledge of diagnostic assessment has not been fully internalized into their pedagogical actions in the classroom.

To further explore the challenges faced by teachers, you can refer to the following research journals. The findings of Nandini et al. confirm the existence of several barriers faced by teachers at the preparation, implementation, and follow-up stages of diagnostic assessments. These include a lack of understanding regarding the substance of diagnostic assessment, difficulties in developing valid and relevant questions, limited diversity of assessment tools and methods, challenges in controlling and ensuring students answer according to their true circumstances, and limitations in interpreting assessment results (Nandini et al., 2024) (Lenny Kurniatim et all, 2023). Out of 36 teachers observed, only 8 confidently stated that they had tried implementing differentiated instruction, while the other 28 reported not having done so. The primary difficulties encountered in implementing differentiated instruction included identifying student needs and determining appropriate variations of media and instructional methods for each group of students (Yolanda et al., 2024).

Results from interviews with two teachers indicate that diagnostic assessment has a positive impact on student learning outcomes, since this assessment helps teachers identify their students' learning needs, map their abilities, and design differentiated instruction. However, the analysis also revealed that both teachers still experienced difficulties in compiling and applying diagnostic assessments, especially regarding the selection of instruments appropriate for the intended objectives and learning context as well as accommodating the wide range of student understanding levels and learning styles (Kurniawan et al., 2025). The challenges faced by teachers in implementing differentiated assessments are complex and often stem from systemic factors, not just individual issues. Limitations in time and resources serve as structural barriers that require support from schools and policymakers. Teachers' lack of understanding also points to the importance of sustained and targeted professional development programs. Accordingly, solutions to these challenges do not suffice with increased teacher training alone; they also require a comprehensive approach that includes administrative support, adequate provision of resources, curriculum flexibility, and reduction of teachers' administrative burdens.

The journal reviews found that the factors hindering the implementation of diagnostic assessment results include a lack of teacher understanding regarding the substance of diagnostic assessment, difficulties in creating valid and relevant questions, and limited variety in assessment tools and methods. Teachers also experience challenges in monitoring and ensuring that students answer based on their actual circumstances and in interpreting assessment results. In addition, the implementation of differentiated instruction is hampered by difficulties in identifying student learning needs, determining appropriate variations of media and instructional strategies, and adjusting instruments and strategies to match the different levels of understanding and learning styles of students.

Other constraints are systemic in nature, including limited time, resources, and support from schools as well as policymakers. These findings emphasize that the problem is not only with individual teachers, but also with structural and organizational factors within schools, thereby requiring a comprehensive approach through ongoing professional development, provision of adequate resources, curriculum flexibility, reduction of administrative burdens, and administrative support to enable teachers to effectively implement diagnostic assessment and differentiated instruction.

Moreover, some teachers still adhere to uniform instructional approaches, resulting in diagnostic assessment results not being optimally used to tailor instructional strategies to individual students' needs. This situation emphasizes that improving teacher competency should focus not only on theoretical understanding but also on the ability to concretely apply the results of diagnostic assessments in the design of differentiated instruction. Practice-based training and collaborative mentoring among teachers can serve as effective strategies to overcome this gap and strengthen implementation skills in the field.

Teachers who have not yet understood the concept of diagnostic assessment or differentiated instruction, have not been able to implement the results of diagnostic assessment in the learning process, and still face various obstacles, make up 15% of the total. Although this proportion is relatively small, it remains important to address because it represents a group of teachers who are still at the initial stage of understanding in the modern learning paradigm based on students' learning needs. This condition is reflected in the following research journal (Nugroho et al., 2023): There remains apprehension among teachers about conducting diagnostic assessments due to insufficient socialization regarding the implementation of the Merdeka Curriculum (IKM), highlighting the need for training and guidance for teachers (Siti Zulaiha et all, 2022). A lack of teacher skills and preparedness in using varied teaching methods and media (Astri Fifani et al., 2023). Minimal teacher understanding of the Merdeka Curriculum, unclear

assessment systems, and difficulties in mapping students' abilities are among the challenges faced in implementation.

Academically, this situation indicates that not all teachers have equal access and opportunities for training or mentoring related to diagnostic assessment and differentiated instruction. This lack of understanding may be due to limited information, a scarcity of professional development activities, as well as a learning culture that is still oriented towards conventional and uniform approaches. As a result, teachers in this category tend to conduct instruction without considering variations in students' abilities, interests, or readiness to learn. This phenomenon points to the need for more intensive interventions via training programs, workshops, and ongoing academic supervision so that teachers can improve their assessment literacy and ability to design adaptive learning. By strengthening teachers' foundational understanding and implementation skills in diagnostic assessment, it is hoped that gaps in the practice of differentiated instruction across levels and individuals can be minimized, thus improving the quality of instruction in schools so it is more equitable and oriented towards students' learning needs.

Based on these findings, it can be concluded that the implementation of diagnostic assessment in differentiated learning by teachers is still at varied stages. Academically, these findings affirm the existence of a gap between teachers' conceptual understanding and their implemented ability to integrate diagnostic assessments into learning practices. Studies examining the implementation of assessment, differentiated instruction, and innovative teaching strategies indicate that educators face a variety of challenges that can be categorized into four main dimensions: technical challenges, practical constraints, systemic barriers, and psychological factors.

First, technical challenges arise when teachers struggle to design, implement, and interpret assessments accurately. Many educators have not yet mastered appropriate analytical procedures, including the selection of cognitive indicators, the development of rubrics, and the interpretation of learning outcome data. Uncertainty in determining assessments that align with individual student characteristics further increases technical complexity. In this context, debates on learning styles also become a relevant issue. Although adjusting instruction based on learning preferences—such as visual, auditory, or kinaesthetic may enhance student engagement, empirical evidence regarding its impact on learning outcomes remains inconsistent and highly contested. Therefore, learning styles are best regarded as an initial reference for understanding learner variation rather than a rigid pedagogical framework.

Second, practical constraints relate to limited time, large class sizes, and insufficient supporting resources. Teachers often lack the time needed to prepare differentiated instruction, provide individualized feedback, or conduct thorough observations.

Large class sizes exacerbate the difficulty of giving adequate attention to each student, while unequal access to learning facilities hinders the adoption of alternative assessment strategies and varied instructional approaches.

Third, systemic barriers can be seen in the lack of continuous professional development, limited administrative support, and rigid curriculum structures that restrict teacher creativity. Available training programs tend to be conceptual and do not offer practical skills that can be readily applied. In addition, administrative demands divert teachers' focus from analyzing assessments and designing differentiated instruction in depth. A dense curriculum also limits teachers' ability to adjust learning flexibly according to individual student needs.

Fourth, psychological factors, such as low self-efficacy and resistance to change, further complicate implementation. Some teachers feel insufficiently confident in adopting new strategies due to limited experience, fear of failure, or attachment to traditional teaching methods. The shift toward more responsive instruction that accommodates diverse learner needs, including variations in learning preferences, is often perceived as an added burden and may trigger internal resistance.

Overall, a synthesis of various studies suggests that efforts to improve the quality of assessment and differentiated instruction require a holistic approach. Enhancing teachers' technical capacity, providing adequate practical and systemic support, and strengthening psychological aspects through professional learning communities must proceed in tandem. Furthermore, the discourse on learning styles should be positioned proportionally as a tool for understanding learner diversity, rather than as a deterministic model. Thus, instructional transformation can take place more effectively, realistically, and sustainably.

Pedagogical impacts identified in various studies related to the neglect of diagnostic assessment results on students' effectiveness, motivation, and learning outcomes

Based on the results of the review of 20 journals in this study, all research findings consistently emphasize that ignoring diagnostic assessment results have serious pedagogical impacts on students' effectiveness, motivation, and learning outcomes. Conceptually, diagnostic assessment serves as the primary foundation in differentiated learning processes, as through this instrument, teachers can map students' learning readiness, interests, and learning style profiles. When these assessment results are not utilized systematically, the learning process loses its differentiation direction. Consequently, the teaching strategies implemented tend to be homogeneous and unresponsive to the differences in students' learning characteristics. This lowers the effectiveness of learning because individual needs are unmet, resulting in decreased intrinsic student motivation to learn. This impact is

evident from the disparity in achievement between students who can learn independently and those who require guidance based on learning styles. When teachers fail to follow up on diagnostic assessment results, most students risk falling behind because they do not receive support corresponding to the learning method best suited for them be it visual, auditory, or kinaesthetic. In a pedagogical context, this condition indicates a failure to realize the student-centered learning principle, central to the Merdeka Curriculum. Student-centered learning, however, demands teachers understand student learning profiles and adapt the learning process according to each student's needs. Conversely, effective utilization of diagnostic assessment results has proven to enhance learning quality through the application of content, process, and product differentiation. When teachers tailor materials and methods to students' learning styles, there is a significant increase in students' emotional and cognitive engagement in learning activities. Learning becomes more meaningful because students feel valued as unique individuals. The positive impacts extend not only to improved learning outcomes but also to the growth of students' motivation, independence, and self-confidence in constructing knowledge. Nonetheless, this ideal implementation often faces structural and technical obstacles. Teachers encounter time constraints when conducting comprehensive diagnostic assessments and difficulties in preparing adaptive learning media variations. Administrative burdens, limited digital resources, and lack of professional training also narrow the space for teachers' pedagogical innovations. As a result, differentiation, which should be a means of equitable learning opportunities, often stops at the conceptual level.

Conceptual recommendations emerging from literature reviews to optimize the integration of diagnostic assessment results into differentiated learning

This literature review recommends:

a. For Teacher Education

To enable teachers to consistently implement diagnostic assessment and differentiated learning in the classroom, professional education needs to provide authentic and applicable learning experiences. The Pre-service and In-service Teacher Professional Education Programs (PPG) should include case-based modules that use diagnostic assessment data from each teacher's own school. Teachers must be trained to implement the results of their diagnostic assessments, starting from data analysis, designing differentiated content/process/product, to micro-teaching trials in several different classes.

b. For Policymakers / School Leaders

Efforts to optimize diagnostic assessment can only be effective if schools provide a work structure that allows teachers to analyze data and collaboratively design

instruction. Principals should allocate a dedicated weekly block of time (for example, 60-90 minutes) for diagnostic data analysis and collaborative lesson planning among teachers. Principals must review administrative workloads and eliminate tasks that do not directly contribute to learning, as well as provide basic digital facilities for processing diagnostic data and designing instructional materials relevant to the characteristics of each class.

c. For Researchers

The need for adaptive instructional media requires closer research collaboration between academics and practitioners to ensure innovations are truly relevant to classroom needs. Future research needs to engage in discussions and co-design with teachers to develop and test prototypes of digital-based adaptive instructional media that can present accessible learning materials with differentiated content tailored to students' learning styles. Additionally, this media can also automate the mapping of students' readiness, interests, and learning profiles into differentiation recommendations, serving as a tool to assist teachers in instruction.

D. Conclusions

This study affirms that diagnostic assessment serves as a crucial foundation for implementing adaptive, student-centered learning. By mapping students' initial abilities, characteristics, learning styles, and social-emotional needs, diagnostic assessment provides data that enables teachers to design truly relevant instructional strategies. However, findings from various studies indicate that practices in the field do not yet fully reflect this principle. Diagnostic assessments are often conducted, but their results are not optimally used to guide the learning process. As a result, instruction tends to be uniform, less responsive to individual differences, and may reduce motivation as well as learning effectiveness. Ignoring diagnostic data brings clear pedagogical consequences: learning becomes less meaningful, less stimulating of active student participation, and fails to address learning gaps. In fact, when diagnostic assessment is properly utilized, differentiated instruction can take place in a more interactive and enjoyable manner, increasing both student motivation and learning achievement. This requires teachers to act as reflective, data-driven designers of learning, rather than merely curriculum implementers. Therefore, this study underscores the need to optimize diagnostic assessment as an instrument for making pedagogical decisions. Stronger integration between assessment results, learning planning, and the implementation of differentiated strategies is key to achieving inclusive and high-quality learning. The findings of this study are expected to serve as a reference for teachers and educational stakeholders in improving instructional practices to be more adaptive, personalized, and aligned with the learning needs of each student.

E. Acknowledgement

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