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The Use of Differentiated Instruction with Technological Support for Teaching English in Primary School

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Abstract

In the era of personalized learning, Differentiated Instruction (DI) has emerged as a pedagogical approach that accommodates the diverse needs, readiness, and learning preferences of students. However, available research about the practice of DI, especially when integrated with technology in English language teaching, remains limited, leaving its practical implementation unclear. This study aims to investigate the use of DI supported by technology in teaching English in Indonesian primary schools. Employing a qualitative case study design across three school settings, data were collected through classroom observations, document reviews, and in-depth interviews with English teachers and headmasters. Thematic analysis was used to explore DI strategies, the supporting factors, and the challenges in implementing DI. Findings revealed that DI was applied in stages, starting from initial assessments, grouping students based on learning readiness, and delivering tiered materials using various digital tools such as Kahoot, Duolingo, and Padlet. The implementation was supported by school leadership, national curriculum mandates, and teacher collaboration, but hindered by time constraints, preparation complexity, and potential perceptions of unfairness. This study provides practical insights and a model for applying DI in primary EFL classrooms using technological tools to enhance inclusive and student-centered instruction.

Keywords: differentiated instruction, primary school, teaching English, teacher reflection, technology

INTRODUCTION

Researchers have noted that Differentiated Instruction (DI) is an effective strategy for accommodating diverse students (Almujab, 2023; Ismajli & Morina, 2018; Morgan, 2014). The results of their research have shown that the implementation of DI improves the levels of students' engagement in learning (Marlina, 2023; Moallemi, 2024), and aspects of children's cognitive, affective, and psychomotor development (Astuti et al., 2022). Further, combined with the Project-based learning (PBL) model, DI can improve student learning outcomes in the main idea material (Aulia et al., 2024; Solehudin & Rochmiyati, 2023), scientific literacy skills and student activity (Dewi et al., 2023; Haryanto et al., 2024), and overall student learning motivation, understanding, and creativity (Hidayat et al., 2024; Sari et al., 2023). Moreover, in accordance with the independent learning (Merdeka Belajar) Curriculum in Indonesia, the implementation of DI improves students' outcomes in English lessons (Hidayati & Sujarwati, 2023; Erawati et al., 2025). However, despite its proven efficacy and its mandate within the national curriculum, recent literature emphasizes that the practical implementation of DI in the field remains highly problematic. Teachers frequently struggle to translate these theoretical frameworks into daily teaching practices, citing excessive workload, time constraints, and inadequate pedagogical training as major barriers to managing diverse student readiness and learning profiles in real-time classroom settings (Smets et al., 2020). While previous studies have extensively submitted data on the general benefits of DI, there is a significant lack of critical analysis on how this strategy is actually

operationalized and adjusted to the dynamic realities of the field. More recently, scholars have pointed out that integrating educational technology could alleviate the complex administrative burden of DI (et al., 2025), yet empirical studies exploring this intersection remain sparse. Specifically, research concerning the practical challenges and technological integration of DI in English language teaching at the primary school level is severely limited, as most existing literature tends to focus on secondary education or STEM subjects (Margot & Kettler, 2019). Therefore, to bridge this gap, it is crucial to move beyond merely positioning DI as an ideal concept and instead investigate how it is practically executed, analyzed, and adapted through technological support to overcome real-world classroom challenges.

Some previous research on how DI is perceived shows challenges and obstacles that demotivate teachers to use this strategy. Wan (2015) found that in-service teachers perceived differentiated assessment to be the most difficult part when practicing DI in the Hong Kong context, as they were concerned about its fairness in an examination-oriented environment. Gaitas & Martins (2016) perceived that the most difficult DI practices were under the domain of activities and materials, associated with the adaptation of curricular elements (content, process, and product) based on student characteristics (readiness, interest, and learning profiles). Geel & al (2019) and Smets et al (2020) highlighted that differentiation is regarded as a complex teaching task which beginning teachers feel unprepared for, as it is considered a complex type of educational change; thus, professional development and the redesign of teacher training curricula seem desirable. Mills et al (2014) In Queensland, Australia, a study concluded that differentiation is a complex concept that is not easy to shift from a policy to a classroom context, requiring more careful explication at the policy level and more support for teachers to enact. Many teachers did not have the time to develop a deep understanding of what it would mean to differentiate their classrooms. Ismajli & Morina (2018) concluded that the understanding and implementation of DI in primary schools are not at an adequate level, and teachers pay more attention to the product rather than the content and the DI process. These documented obstacles highlight an urgent need to identify and analyze real-world models where DI is implemented effectively and sustainably.

Responding to this need, the first author of this article conducted a preliminary study by consulting with the Board of Teacher Leaders (*Balai Besar Guru Penggerak*) and several education experts, including lecturers from a prominent public university in Indonesia. Through this consultation, three schools were identified as having successfully implemented DI integrated with technology: "My Little Island" International Primary School, Excellent Primary School "Permata Jingga Pakis," and Public Primary School "Parangargo Wagir 1." Empirical evidence from classroom observations and interviews at these schools confirmed that the DI strategy was systematically carried out through initial assessments, tiered tasks, flexible grouping, and the integration of educational technologies such as Kahoot, Duolingo, Padlet, and Wordwall. These schools demonstrated strong support from school leadership, regular teacher reflection, and the integration of DI into their vision, mission, and school culture. For instance, School B received government recognition as a model school for its innovative DI practices, while teachers in all three schools were actively engaged in professional development and peer collaboration. These findings position the three schools as potential pilot models for broader replication across Indonesia, offering practical pathways for teachers to overcome DI challenges and adopt inclusive, technology-supported instruction effectively.

While the preliminary findings from these pilot schools are promising, the broader academic literature still lacks a comprehensive, actionable framework for implementing technology-supported DI, particularly in primary school English classrooms. Existing studies primarily focus on the general effectiveness of DI, its impact on student achievement, or the theoretical obstacles teachers face, without providing clear guidance on how to integrate digital tools to solve these issues. Therefore, the novelty of this current research lies in its shift from examining DI as a problematic or purely theoretical concept to showcasing its successful,

real-world operationalization through educational technology. Unlike previous research that largely highlights teachers' unpreparedness or focuses on non-digital environments, this study uniquely maps how specific digital tools are practically integrated into the core stages of DI within the Indonesian primary education context. Consequently, to bridge the gap between policy and practice, this study aims to comprehensively investigate the use of DI with technological support for teaching English in primary schools. Specifically, the objectives of this research are to: (1) explore the step-by-step practical strategies used by teachers to integrate DI with digital tools, (2) identify the school-level and classroom-level supporting factors that facilitate this successful integration, and (3) analyze how teachers practically navigate and overcome the challenges of executing DI in real-time classroom settings.

METHOD

This study employed a qualitative case study design across three school settings, focusing on discussions about the implementation of Differentiated Instruction (DI) integrated with technology in these schools. The sampling technique used was purposive sampling. Three samples were selected for this research, based on recommendations and data from Balai Besar Guru Penggerak, and on the advice of several educational experts, including lecturers from prominent universities in Malang, known for their teaching and training faculties. The samples were labeled as school A, school B, and school C. For each school, three participants or respondents were chosen. The first respondent was the headmaster, while the second and third respondents were English teachers who had successfully implemented DI.

Schools A, B, and C had implemented curriculum differentiation for 2 years and successfully adapted DI for English instruction. Specifically, school B had been awarded by the educational government as the best school or model school. School A was located in the central city of Malang on Dieng Street, School B was located in Malang Regency on Permata Jingga Street in Pakis, and School C was located in the rural area of Malang District in Wagir Village. These three schools sometimes conducted in-house training and invited other schools to discuss how to implement DI integrated with technology. Many teachers and parents responded positively and even expressed appreciation for the innovative program. Schools that applied curriculum differentiation were considered to have contributed significantly to students' achievement success. Almost all students in these three schools succeeded in achieving the expected progress. This is why these three schools were deemed necessary and important as case studies for this research, to provide a model and knowledge to all schools in Indonesia on how to manage curriculum and classrooms effectively.

This research aimed to reveal the experiences of headmasters and teachers in implementing Differentiated Instruction (DI) through stories and interviews. I visited all participants at their schools one by one. I made agreements with the participants through a research consent form, and all participants agreed to voluntarily participate in the research. To gather the data, I collected information from classroom observations, document reviews (lesson plans, syllabi/learning outcomes, teaching journals, and reflection reports), and in-depth interviews with teachers and headmasters. Additionally, to enrich the data, I joined discussions during school meetings. At the end of each week, the schools held meetings to evaluate what had gone well and what had not. I explored their experiences through in-depth interviews, focusing on how they planned, implemented, assessed, reflected, and continuously improved their professional learning related to the implementation of DI.

Each interview lasted between 45 and 60 minutes. The interviews with all participants were conducted offline. I visited all participants, and we conducted the interviews at school after they had finished teaching. The interview data were audio-recorded and then transcribed. The next step was to reconstruct the information collected from the interview transcripts. The interview transcripts were shown to all participants to confirm and reconfirm that the data were appropriate and accurate.

After that, the data, which had been confirmed and verified as accurate, were categorized and labeled by theme. The data were analyzed thematically, focusing on the DI strategies used by teachers to teach English lessons in primary schools, the factors influencing teachers to use DI in teaching English, and the challenges faced by teachers in teaching English using DI. The themes were identified based on the literature review. In addition to this step, the data were coded to compare, contrast, and classify them. I selected the data that represented the research questions. Any similar data were combined and sorted to create the most effective and useful information. I selected the data from the interviews with teachers that were considered interesting and important. Qualitative data analyses were conducted to determine the significance of the findings. To maintain the accuracy and credibility of the narrative data, I maintained communication and collaboration with the participants throughout the process, from data collection to validation and reporting. I maintained frequent communication with all participants online through WhatsApp and phone calls. The communication was strictly related to the primary data of the research, such as sending consent forms and interview protocols.

RESULT AND DISCUSSION

Result

This section reports the findings that answer the research questions. The qualitative data analysis revealed three overarching themes that structure the findings of this study. These themes capture how differentiated instruction with technological support is enacted in primary EFL classrooms, the institutional and pedagogical factors that motivate teachers to adopt this approach, and the challenges encountered during its implementation, along with the strategies used to address them. Specifically, the findings are organised into: (1) differentiated instruction strategies with technological support in teaching English, including lesson planning, classroom implementation, reflection, and professional development; (2) factors influencing teachers' decisions to implement differentiated instruction, encompassing teacher beliefs, leadership support, school climate, and curriculum mandates; and (3) challenges faced by teachers in implementing differentiated instruction and the practical solutions developed to maintain fairness, feasibility, and instructional effectiveness.

DI strategies with technological support used by teachers to teach English lessons in primary schools

How teachers plan the lesson

Teacher A demonstrated a reflective and responsive approach to lesson planning by basing instructional design on both initial and ongoing classroom assessments. In the first meeting, the lesson plan was developed based on the results of an initial diagnostic assessment conducted in class. For the subsequent meetings, the teacher constructed each lesson plan based on the evaluation and reflection results of the previous session. This practice allowed the teacher to continuously improve the learning design by selecting media, materials, and methods that were most appropriate to meet students' evolving needs.

Unlike conventional teachers who typically design lesson plans at the beginning of the semester for the entire term, Teacher A, as a Guru Penggerak, developed lesson plans just before each teaching day. This approach reflects a commitment to dynamic and student-centered instruction, where planning is grounded in real-time classroom data rather than fixed templates. In doing so, Teacher A also referred to sample lesson plans provided by the Department of Teachers' Development Center (Balai Besar Guru Penggerak), ensuring that while the instructional strategy was adaptive, it still aligned with national teaching standards. This model exemplifies the core principle of differentiated instruction: proactive and flexible planning tailored to individual learner differences. As Teacher A explained:

> I develop lesson plans referring to the results of the initial in-class assessment for the first meeting. For the second meeting and so on, I refer to the evaluation results of the previous meeting. The lesson plan that I prepared adopted the sample lesson plan provided by the Department of Teachers' Development Center (Balai Besar Guru Penggerak).

How teachers implement DI

The implementation of differentiated instruction (DI) in the classroom is rooted in the understanding that students bring varying levels of readiness, learning styles, and interests. Teacher A emphasized that one of the main reasons for applying DI is the observable diversity in students' academic achievement and preparedness. This diversity, according to Teacher A, necessitates the use of pre-assessment or initial assessment as a foundational step. The goal of this initial stage is to gather comprehensive information about each student's readiness to learn and their current level of achievement.

As Teacher A stated, "Pre-assessment is the foundation of differentiated instruction by educators." This process enables teachers to map out students' learning profiles and make informed decisions about how to approach instruction. The results of these assessments are then used to adapt instructional materials, select appropriate media, and choose effective teaching methods that align with students' needs.

In practice, differentiated instruction guided by initial assessment allows teachers to design learning experiences that are more personalized. It ensures that the content, process, and product of learning are responsive to students' individual differences, including their cognitive readiness, preferred learning modalities, and personal interests. Thus, the integration of differentiated strategies in the classroom is not only a pedagogical choice but a necessary response to the heterogeneity of learners.

Teachers' assumption that DI is grouped based on learning styles is a misconception. DI does not need to be done through grouping students based on visual, auditory, and kinaesthetic learning styles because one student can have multiple intelligences and multiple learning styles. Students with visual styles can learn kinaesthetically. In implementing DI, students can be grouped homogeneously or heterogeneously based on learning readiness or learning achievement. A homogeneous group means having a group with the same ability. A heterogeneous group means having a group with different levels of ability. In this case, students who are of higher ability assist their friends who have lower ability, or we call this peer teaching. The teacher's focus is on student learning outcomes. Besides, Teachers need to consider these two things in DI. First, learning resources and strategies need to be matched with the most effective ones to achieve specific learning objectives. Second, learners need a variety of stimuli and learning resources to get used to using various learning resources. As teacher B said:

> Group members who work as students always change according to the needs of learning objectives based on achievements, which can be homogeneous or heterogeneous. Heterogeneous means that superior students teach their less capable friends. Teachers must know which students still need assistance and which students can learn independently and need additional reinforcement of more complex and challenging material.

The emphasis of differentiated instruction is on 3 things, which we call the 3 types of differentiated instruction. They are content differentiation, process differentiation, and product differentiation. Differentiated Instruction on content, process, and product was relevant to problem-based learning and project-based learning strategy. In project-based learning, students created the product as they could. The product represented students' creativity and their competence in understanding certain material and topics. Teacher C said:

To implement content differentiation, teachers need to provide varied learning resources. Process differentiation is about activities designed to help learners absorb or understand learning. Teachers need to provide differentiated instruction processes and forms of assistance according to learners' readiness. Product differentiation is related to how learners show what they know, understand, and can do through the products they produce.

Content-differentiated instruction involves differentiating questions/exercises for some learners who are considered superior. The problems/exercises for children with superior categories have higher complexity, so that in the same period of time, superior students and students with average abilities can complete the exercises/challenges together. Teacher D shared:

> Among the 32 students in class 5, I noticed that 3 students always finished first when given the task. I implemented content-differentiated instruction. I differentiated the challenge for these 3 learners. I gave the same number of problems to all 32 students, but for the 3 students with above-average ability, I chose texts that were higher in difficulty.

The application of differentiated instruction to accommodate each student's needs fairly can be done by providing tiered or leveled materials and exercises. All students started with the basic level. Students who passed the basic level could progress to the next level. Students with above-average ability could race well to complete the challenges of the next level. Teacher E told:

So, all students get the same exercises starting from level 1. Students who have completed level 1 can continue to the next level. Thus, students with superior abilities can race quickly to complete higher and more complex challenges. Meanwhile, students with weak abilities will enjoy low levels related to their learning readiness.

How teachers integrate technology in teaching and learning using DI

To support the success of differentiated instruction, teachers utilized technology. Information technology-based learning media innovation could improve student learning outcomes. Information technology-based learning media innovation could overcome boredom due to monotonous learning. With learning innovations utilizing technology, the understanding of the material becomes better. Students became more active, more enthusiastic, and found learning more interesting and challenging. Conventional learning styles tend to make children feel bored. Technology helps teachers create learning that suits the characteristics of students in this day and age, where all interests are always dealing with digital media. Teacher A said:

I utilize a projector, laptop, and some game apps such as Duolingo, Kahoot, Quizzes, Padlet, Mentimeter, Answer Garden, and Tricider. Technology really supports learning well. With the help of technology, we can provide a variety of interesting materials. Further, teacher B adds:

> I often utilize the games feature, such as Word Wall, Kahoot, Duolingo, and quizzes. I use this application not only for student practice activities, but also for initial assessment and formative assessment. But the challenge is, teachers need to prepare quiz materials in several levels, at least at least 3 levels for advanced, developing and undeveloped students.

How does a teacher reflect on the lesson

Teachers learned students' characteristics and classroom characteristics. Teachers always do reflection at the end of the session. What teachers plan often did not meet what teachers expect in the real practice. From the result of reflection, teachers considered and planned the best teaching design for the following meeting. Teacher C said:

> Students whom I consider to have high abilities show difficulty when I give challenging exercises. The learning media that I believed to be interesting turned out to be interesting to some students, but not to others.

From those teacher experience, teacher need to revise the exercise and the media for the following meeting. Sometimes, it needed more than 3 trial to meet the expected learning media and exercise. That is why, teacher need to learn much, joining workshop and training and sharing best practice each other.

Factors that influenced the teachers to use DI to teach English lessons in primary schools

Teachers' comfort using differentiated Instruction to teach English in classroom

Teachers felt comfortable implementing differentiated instruction because they saw all students learning optimally. Teachers considered this differentiated instruction provided fair and appropriate services because it was in line with students' needs. Teacher A said:

> I feel comfortable implementing differentiated instruction because I see all my students learning optimally. I feel that differentiated instruction provides fair and appropriate services because it is in line with students' needs. Differentiated instruction is in line with the principles of learning, which are effective, creative, innovative, and student-centered. Teachers teach what students need, not what teachers want.

Factors that encourage teachers to use differentiated Instruction in the classroom

As a driving school, teachers were required by principals and supervisors to implement differentiated instruction because this learning is the most appropriate learning in implementing the independent curriculum, which is the national curriculum. The driving school is an excellent school which is determined by the education ministry, so teachers are motivated to be the best among other schools that will receive more support from the government. Teacher B said:

> We are a driving school mandated by the government to implement the independent curriculum. Differentiated instruction is the most appropriate teaching strategy in the Independent Curriculum concept. Principals, supervisors, offices, and committees all encourage us to learn and try to implement differentiated instruction even though this learning is actually considered hard learning for teachers because it requires a lot of preparation and planning.

How does school makes positive climate and academic learning atmosphere in school environment

The data from the interview with Headmaster C highlighted the school's proactive efforts in creating a safe and supportive learning environment. A comfortable school atmosphere is seen as a prerequisite for effective learning, and the school leadership has demonstrated a strong commitment to maintaining a bully-free environment.

Headmaster C explained, "I formed the Anti-Bullying Movement team because bullying prevents children from learning comfortably and the school climate is not good." This statement underscores the belief that bullying not only harms students emotionally but also disrupts the overall quality of education and school climate.

In response to these concerns, the headmaster established a dedicated Anti-Bullying Movement team, which is composed of selected students and supervised by a designated teacher. The team functions as both a preventive and responsive unit, encouraging students to collectively respond when bullying is observed and to report incidents immediately to teachers. This peer-based strategy fosters a sense of shared responsibility and empowerment among students, creating a more participatory school culture.

The school also ensures that all reports of bullying are taken seriously, with immediate action taken by the school, including counselling for the students involved and, when necessary, communication with parents. This systematic handling of bullying reflects a clear policy framework and a commitment to student well-being, which aligns with the broader goal of fostering an inclusive and psychologically safe environment conducive to learning.

These findings illustrate that school climate, particularly safety and emotional support, is a critical element in promoting effective teaching and learning, as well as in supporting the implementation of student-centered approaches like differentiated instruction.

Challenges faced by teachers in teaching English using DI, and how teachers solve

Teachers felt confused about implementing differentiated instruction because they have to serve the diverse needs of students with a variety of materials and treatments but not to the point of causing social jealousy, let alone discrimination or racism. The solution to this challenge, Teacher A shared:

> The solution is to implement levelled exercises. All children get the same explanation, and the same opportunity for exercise. However, the exercises are leveled. Students can work on the next level after successfully completing the previous level. By implementing this level system, all children get the same experience, all starting from level 1.

The next challenge was related to learning preparation. Differentiated instruction was difficult for teachers, burdensome, and added to the burden of having to design 3 learning models at a time, having to develop 3 teaching modules in 1 class, and 3 assessment models in one class. Teacher D said:

Just imagine if the teacher teaches 10 classes, then how many tasks the teacher must complete. In addition, reporting learning outcomes or report cards will also add to the teacher's difficulties because from 3 groups with different learning treatments and assessments, teachers must write report cards differently based on what assessments have been given. So, a lot of teacher time is consumed to prepare differentiated instruction.

Challenges related to preparation were challenges that must be resolved by teachers by managing time as well as possible. Teacher E said:

> The school provides rewards for teachers who show good performance and get satisfactory responses from students. This can trigger teacher motivation to be more enthusiastic in preparing the best learning. In addition, the school also provides time for teachers to work on preparing learning designs such as varied materials, interesting media and innovative strategies.

In differentiated instruction, teachers grouped students into 3 groups based on achievement. Then this was prone to cause negative perceptions from students. Students in the undeveloped group would feel discriminated against group of underprivileged students. Meanwhile, students in the superior group might bully the lower academic group because the culture of achievement competition among students cannot be avoided.

Grouping did not focus on learner achievement but grouping should be varied and not always homogeneous. Grouping can be heterogeneous where students who have above-average abilities can become peer tutors. Grouping can also be based on learning interests such as singing groups, drawing groups, storytelling groups, writing groups and exploration groups. Storytelling groups can be categorized into adventure story groups, mystical story groups, fantasy story groups and daily life story groups. So, the grouping should not be permanent, it should change to avoid the perception of discrimination.

Then the next challenge was related to how teachers can provide different treatment according to the needs of different students but still maintain justice or avoid social jealousy. Teacher F said:

> Differentiated instruction provides treatment and materials to several groups of students differently depending on the achievement level of the group. This causes the achievements of each group to be clearly different. The standard for each student in the same class becomes different and can trigger the stigma of unfairness.

Regarding this challenge, teacher B provided the following solution:

> To implement differentiated instruction, teachers need to have qualified abilities, extensive knowledge related to concepts, strategies, media and approaches as well as good skills in identifying students' learning needs according to their learning styles, learning interests and learning readiness. Teacher needs to participate in teacher professionalism training, carry out lesson study and must repeatedly practice and reflect on the implementation of differentiated instruction.

To ensure that teachers had implemented differentiated instruction well, principals conducted learning evaluation and supervision. Headmaster B said:

> I conduct learning supervision. The results of supervision become the teacher's attention and consideration in improving the quality of learning and become the school's consideration in improving learning media facilities, planning teacher competency development programs and evaluating the school's Vision and Mission as a reference for the principal's work program. Supervision activities include classroom management, media and strategies.

Discussion

This research proposed the implementation of Differentiated Instruction (DI) as the best teaching strategy for diverse students. DI considers all differences among students in the same class. It can accommodate students' learning needs by paying attention to their interests, profiles, learning styles, and learning readiness. This strategy is on the opposite to the one-size-fits-all approach. DI is making the learning environment more challenging and interesting by providing several different learning choices to make learners feel more responsible for their learning (Clapper, 2010). Students who have responsibility for their learning, their motivation, interest, and autonomy increase well (Andina et al., 2020; Khulaifiyah et al., 2023; Sanacore, 2008) Basically, DI is intended to improve learner autonomy, and it can be achieved by enabling the students to take responsibility for their learning through clear learning objective explanation, providing a learning environment with different learning styles, materials, and activities. Similarly, implementing different ways of learning in term of content, process, product as well as assessment, help learners become more autonomous (Dhaifi et al., 2024; Mardhatillah & Suharyadi, 2023; Tomlinson, 2017). Hence, differentiating the learning process provides students the opportunities to enhance their learning autonomy (Convery & Coyle, 1993).

Furthermore, a significant finding of this research is the critical role of digital technology in operationalizing DI. The results clearly show that teachers effectively integrated various educational applications such as Kahoot, Duolingo, and Padlet to accommodate diverse learning needs. Specifically, teachers utilized Kahoot and Wordwall not only for engaging student practice but also as effective tools for conducting initial diagnostic assessments and formative assessments. These tools allowed teachers to seamlessly create tiered quizzes (e.g., level 1 to advanced levels) tailored to students' varying readiness. Meanwhile, Duolingo supported personalized and independent language learning, and Padlet was utilized to facilitate differentiated products and collaborative learning. The integration of these technologies significantly reduced student boredom and made the learning process more interactive and challenging.

These findings strongly support the theory proposed by Tomlinson (2017), which emphasizes that modifying content, process, and product is essential in DI. The use of leveled digital quizzes directly aligns with Tomlinson's concept of content and process differentiation. Moreover, the results of this study also support and extend previous research by Hidayat et al (2024) and Sari et al (2023), proving that technological innovation in DI enhances student enthusiasm and understanding.

Conversely, this research contrasts with and provides a solution to the findings of earlier studies, such as Wan (2015), Gaitas & Martins (2016), and Smets et al (2020), which predominantly highlighted teachers' lack of preparation and the overwhelming complexity of implementing DI. While those previous studies concluded that differentiation is an overly complex burden that demotivates teachers, the current research demonstrates that when DI is systematically integrated with accessible digital tools (like Kahoot and Quizizz) and supported by strong school leadership and peer collaboration, the perceived burden is significantly minimized. Ultimately, the clear direction of this research indicates that the successful implementation of DI in primary school English classrooms cannot rely solely on teachers' pedagogical understanding. It fundamentally requires a holistic ecosystem: proactive technology integration to manage diverse learning levels efficiently, continuous professional development, and a supportive school climate.

DI is an appropriate learning strategy used to improve the quality of learning at all levels. This strategy increases students learning interest and certainly students are able to achieve better academic level because students can meet what students want and what students need. Teacher design the teaching and learning refers to student's background, learning readiness, level of language proficiency, interest and learning profile. DI is expected to help create a more effective and beneficial learning experience for students. This finding is in line with Asriadi et al (2023), Liou et al (2023), and Sari et al (2023).

As stated by Moallemi (2024) and supported by Tomlinson (2017), DI caters to students' learning needs according to their interests, learning styles and learning readiness. However, in practice this is difficult to implement. Teachers must focus on one point, namely learning achievement or learning readiness. On the one hand, teachers may pay attention to learning styles and learning interests but it is not a priority. Learning styles and interests are only taken into consideration in preparing learning media and learning strategies or methods that are interesting, innovative and varied.

DI can be done fairly without causing discrimination by arranging groupings in a variable or non-permanent manner. Grouping can be heterogeneous, homogeneous according to learning achievements, or heterogeneous with a mix of superior, developing, and weak by applying peer teaching learning strategies. In content and process differentiation, to anticipate envy and protests between students due to different materials and challenges, teachers can provide tiered questions and materials. Students can continue the next level challenge after completing one level. This way addresses the challenges and issues raised by Setyani (2023) who argues that teacher prefer to use classical methods rather than using DI because teachers do not fully understand how to implement DI properly. Teachers worried that by grouping students based on their achievement or learning readiness, it will make racism or negative perception for those students who are in lower group. Then Bulan et al (2023) add that English teachers teach in the usual way that is done in the classroom, namely generalizing the material for all students in the class.

DI on content, process and product are strategy are relevant to combine with another strategy like problem-based learning and project-based learning. The implementation of DI within a Problem-Based Learning enhances student learning outcomes in the main idea material effectively. Besides, the implementation of problem-based learning based on a DI approach can improve scientific literacy skills and student activity. Students and teachers respond well to the teaching and learning which focus on students need and progress. These findings were parallel to the results of previous studies (Alfan et al., 2025; Aulia et al., 2024; Dalila & al, 2022; Dewi et al., 2023; Solehudin & Rochmiyati, 2023). So, regarding with the

implementation of Merdeka Kurikulum launched by Education ministry, DI support very well in English teaching and learning which was in line with previous research (Hidayati & Sujarwati, 2023; Kholili et al., 2024; Mardhatillah & Suharyadi, 2023).

CONCLUSION

In conclusion, this study demonstrates that integrating technological support, such as Kahoot, Duolingo, and Padlet, into Differentiated Instruction (DI) effectively resolves the practical challenges of teaching English to diverse primary school students by streamlining initial assessments, dynamic student grouping, and the delivery of tiered learning materials. Theoretically, this research contributes to the field of education by extending Tomlinson's foundational DI framework, proving that digital integration transitions differentiation from a theoretically complex and often overwhelming burden into a highly executable, practical strategy for early language acquisition. The practical implications of these findings highlight that successful DI implementation extends beyond individual teachers' pedagogical skills; it necessitates a holistic educational ecosystem characterized by strong school leadership, collaborative professional development, and proactive technology adoption to reduce administrative workloads. Finally, to build upon these insights, it is recommended that future research investigates the longitudinal impacts of technology-assisted DI on students' overall English proficiency across a wider range of socioeconomic contexts, as well as the potential of emerging educational technologies to further automate and refine classroom differentiation.

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