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The Implementation of Differentiated Instruction Integrated With Technology in English Class

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ABSTRACT

The implementation of differentiated instruction is the focus of the Merdeka Curriculum in Indonesia, especially when integrated with technology. The aim is to adapt education to the needs, abilities, and interests of each student. This study explores how English teachers at SMK Negeri 3 Denpasar implement differentiated instruction integrated with technology in the classroom and how this affects students' beliefs in learning English. The method approach used in this study is a mixed-method approach, where qualitative data were collected through classroom observations, while quantitative data were collected through student questionnaires adapted from Horwitz's BALLI framework. The observation results showed that teachers differentiated content, process, and product based on student profiles and learning contexts. As a support for various learning strategies, this study integrated technological tools such as WhatsApp, Google Translate, Quizizz, and Canva. The questionnaire results showed that students had very high beliefs in their language learning abilities when faced with differentiated instruction supported by technology. These findings indicate that the learning model increased students' motivation and self-perception in learning English. This study highlights the importance of teacher adaptability and strategic use of technology to foster a student-centered learning environment that is aligned with the principles of the Merdeka Curriculum.

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INTRODUCTION

According to Latifa et al. (2023), the guidelines used for the teaching and learning process in the classroom are called the Curriculum. The curriculum

currently adopted in Indonesia is the Merdeka Curriculum. Merdeka Curriculum promotes differentiated instruction as a means to personalize learning experiences to accommodate students' various needs, abilities, and interests. This approach emphasizes the adaptation of content, processes, and products to ensure that all learners can achieve academic success, which is rooted in student-centered learning. The main innovation in this curriculum is differentiated instruction, which is a pedagogical approach that responds to students' various needs, interests, readiness levels, and learning profiles by adjusting the content, process, and learning products (Ni'mah et al., 2024). Also, cognitive diversity, interest, and readiness are things that are facilitated for students by differentiated learning.

Differentiated learning is a widely recognized teaching model. According to Baecher et al. (2012), differentiated instruction also involves formative, summative, and diagnostic assessments to adjust learning. However, the success of its implementation depends on teacher readiness and students' beliefs about their learning potential. Teachers often lack confidence in designing learning that truly reflects diverse student profiles and the integration of technology that should support flexible and engaging learning environments is still limited. Moreover, prospective English teachers should be given knowledge about how to teach English using technology to students (Kupchyk & Litvinchuk, 2020). Many schools still face major challenges in translating this vision into practice, despite policy support in Indonesia (Mandasari et al., 2025). Also, despite encouraging differentiated instruction, it is often not implemented consistently. Therefore, English teachers must know how to use technology for teaching purposes.

Many studies have highlighted the importance of blended learning and educational technology, especially in improving English language learning outcomes. The integration of digital tools such as WhatsApp, Google Translate, Quizizz, and Canva has been found to increase student engagement and creativity, support independent learning, and increase access to various learning resources (Gozali & Cahyono, 2022; Metaria & Cahyono, 2024; Napida et al., 2024; Wulyani et al., 2024). According to Kimm et al. (2020), students who are accustomed to using technology in their daily lives now expect digital tools to be embedded in their classroom experiences. Therefore, the use of technology in teaching and learning activities can make students more interested. When implemented appropriately, technology can support differentiated instruction principles by providing varied content and formats that meet individual learning preferences (Admiraal et al., 2017). Furthermore, existing research has largely focused on teacher perspectives, readiness, or curriculum alignment. In the context of vocational schools in Indonesia, only a few studies have examined students' positive responses when technology is integrated into blended learning. This leaves a significant gap in understanding students' perspectives, particularly regarding how blended learning impacts their beliefs about learning when integrated with technology.

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Despite strong theoretical support and curriculum mandate, SMK Negeri 3 Denpasar still faces a gap between the ideal vision and the reality of differentiated, technology-enabled learning. This study attempts to address this gap by investigating how English teachers at SMK Negeri 3 Denpasar implement technology-integrated blended learning and how this approach impacts students' beliefs about English language learning. The novelty of this study lies in its dual focus, capturing the real-world implementation of blended learning in vocational education and examining its psychological impact on learners. By focusing the investigation on students' beliefs and classroom practices, it is hoped that it will provide valuable insights for educators seeking to align instructional practices with evolving curriculum mandates and learners' educational experiences.

METHOD

This study used a mixed methods approach with an exploratory sequential mixed methods design (Creswell & Creswell, 2018). It aims to thoroughly examine the implementation of differentiated instruction integrated with technology in English classes at SMK Negeri 3 Denpasar and how it affects students' beliefs in language learning. First, this study conducted a qualitative phase to explore real-life learning practices and gather in-depth insights from classroom observations. After that, the findings from this phase then informed the design and implementation of the quantitative phase. It aims to measure students' beliefs using a structured questionnaire. Thus, this combination allows for a comprehensive understanding of the learning process and the psychological dimensions of students' engagement and motivation.

The subjects of this study were eleventh grade English teachers and students from SMK Negeri 3 Denpasar. With the aim of identifying classes that have implemented differentiated instruction with technology integration, this study only selected four classes as research subjects. The selected classes were XI Hospitality M1, XI Hospitality M2, XI Culinary W1, and XI Culinary B1, and 150 students were involved in the survey stage. The classes represented a cross-section of vocational program students and were observed during English learning to document the use of differentiated strategies supported by technology. Class selection was carried out using a multistage random sampling technique after the initial sampling stage.

Table 1. The Details of the Sample

No.	Class	Number of the students
1.	XI-M1 Hospitality	37
2.	XI-M2 Hospitality	38
3.	XI-W1 Culinary	37
4.	XI-B1 Culinary	38

Observation sheet and questionnaire were the two main instruments used in this study. The observation sheet was designed using Tomlinson's (2001) differentiation framework, which includes three core components such as content, process, and product. In this study, observation was used to record how teachers modified learning activities, delivered materials using technology, and responded to students' learning needs.

The questionnaire used in this study was adapted from Horwitz's (1988) Beliefs About Language Learning Inventory (BALLI) to investigate students' beliefs within the framework of technology-supported differentiated instruction. It contained 32 items grouped into five indicators, namely foreign language aptitude, difficulty of language learning, nature of language learning, learning and communication strategies, and motivations and expectations. Prior to its full application, the instrument was pre-tested with 32 participants to ensure reliability and clarity. Each item was measured using a five-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree), which included 21 positively worded and 11 negatively worded statements.

The questionnaire consisted of 32 items categorized into five dimensions: beliefs about the difficulty of language learning, learning aptitude, the nature of language learning, learning and communication strategies, and motivation and expectations. Its content validity was confirmed using Gregory's formula, yielding a score of 1.00 which indicates very high validity, while Pearson's product-moment correlation demonstrated that all items were valid (rxy > .349). Furthermore, the reliability test using Cronbach's Alpha produced a coefficient of .949, reflecting a very high level of internal consistency across all items.

Data collection was conducted in two stages. The qualitative stage involved classroom observations and documentation of how teachers integrated differentiated instruction with tools such as WhatsApp, Google Translate, Quizizz, YouTube, and Canva, analyzed using (Miles & Huberman, 1994) interactive model. The quantitative stage utilized the validated questionnaire distributed via Google Forms to 150 students, with responses analyzed through descriptive statistics. The belief scores (X = 107.48) fell within the interval range indicating a "high" level of student beliefs.

RESULTS AND DISCUSSION

Results

1. The Implementation of Differentiated Instruction Integrated with Technology

The results of this study are presented chronologically and thematically based on the three main components of blended learning: content, process, and product, along with the integration of digital devices across all sessions. The implementation of blended learning is clearly visible throughout the observed sessions. Teachers consistently adapt learning content using a variety of learning processes and

encourage students to produce learning outcomes in a variety of formats. These differences are rooted in student majors, readiness levels, interests, and learning preferences, which are supported by the flexible use of technology to enhance engagement and understanding.

During the observation in the first meeting, the four selected classes learned about Descriptive Text with a focus on job descriptions. However, differentiation based on content was clearly applied such as the hospitality class was given material related to hotel and tourism jobs, such as receptionists and waiters, while the culinary class received content about kitchen and food service positions such as pâtissier and assistant chef. The delivery also varied, for example in the hospitality class, the teacher used the Discovery Learning approach and video content to support student understanding. Students worked in pairs to watch videos, take notes, and present their findings in front of the class. Meanwhile, the culinary class began with an interactive game involving images and keywords related to the culinary profession. Students were grouped and given specific roles in describing jobs. Each group collaboratively collected information using tools such as Google Translate and Google Sites. Students then submitted their responses showing differentiation based on products in audio format via WhatsApp. Technological tools such as WhatsApp, YouTube, and Google Translate played an important role in facilitating access to materials and allowing students to work according to their abilities. Hospitality students relied on videos and digital group chats, while culinary students explored visual and text-based online resources.

In the second meeting, students prepared their final projects based on the topic of Descriptive Text. In the hospitality class, the session began with a review of previous material through Q&A interactions. As a hospitality project, students were grouped and allowed to choose a job role. They had the freedom to choose their submission format involving role-play, either in the form of a video or live presentation. Students chose their own responsibilities within the group, such as text reader, talent, videographer. This encouraged collaboration and personalized learning roles, which showed differentiation based on process and product. On the other hand, culinary students completed a Quizizz-based review and then worked in pairs to write a descriptive text, then typed it in Microsoft Word in the computer lab. They could choose to read their text in front of the class or submit an audio recording, but it had to involve a job role relevant to their major. In this meeting, students continued to use tools such as Google Translate, TikTok, and YouTube for vocabulary and idea development. The emphasis on student autonomy and the use of technology reflects a clear implementation of differentiated learning strategies.

In the third session, students were asked to complete and submit their final products. Hospitality students who chose live presentations took turns role-playing in front of the class, while others submitted pre-recorded videos via Google Drive.

The instructor provided feedback on both the live and digital submissions. Afterward, the instructor gave a follow-up quiz via Quizizz to assess learning retention. Culinary students also submitted their work, either orally in class or as a text-audio file. To reinforce learning outcomes, quizzes were administered manually. By maintaining a consistent structure across all four classes, the instructor provided evaluative feedback. The use of Google Drive to collect assignments and the application of choice in the delivery format reinforced the student-centered and differentiated approach.

In the fourth meeting, all classes started a new topic, which was about writing a cover letter. Hospitality students received various input materials such as PowerPoint slides, online articles, and PDF documents distributed via WhatsApp. Before forming small groups to write their own cover letters based on specific job interests, students first worked individually to analyze the structure of the cover letter. They were encouraged to use Google and Google Translate so that they could get help highlighting differences based on content and process. On the other hand, the culinary class received a sample cover letter embedded with audio. Students read and listened to the materials while identifying difficult vocabulary. Then, the teacher facilitated a discussion and encouraged students to research the components of the cover letter using sources such as Google and YouTube. Students made written notes on the structure of the cover letter by working in pairs. This teaching strategy reflects careful adjustment to students' learning styles and abilities with the use of multimodal content and supporting digital tools.

In the fifth meeting, students were introduced to Curriculum Vitae writing so that they could complete and revise their cover letters. Using Canva, hospitality students submitted improved letters and then practiced creating CVs in the computer lab. Teachers guided students in navigating the software and encouraged peer support, especially for those unfamiliar with the tool. Student work was collected via Google Drive with learning activities focused on individual performance but supported through collaboration. Meanwhile, culinary students also worked in the computer lab to create cover letters using Microsoft Word. Teachers offered real-time feedback and assistance as they moved around the room. Teachers provided examples of using Canva and instructed students to begin thinking about their own CV content, as CV creation had not been practiced due to time constraints. This meeting highlighted not only the differentiated process and product but also the use of technology that was built, fostering students' digital literacy and professional communication skills.

In the final session, students in the hospitality class received teacher feedback on their CVs. They then revised them and wrote individual cover letters that were submitted via WhatsApp. After the final submission, the teacher summarized the lessons from the topic and conducted a Quizizz-based assessment to gauge students' understanding. Students were once again allowed to use digital resources such as

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Google Translate during writing. On the other hand, culinary students used this session to create their CVs on Canva. Students were encouraged to support each other even though they were working individually. Meanwhile, the teacher monitored progress and provided guidance. The cover letters from the previous session and the newly created CVs were considered the final products. To close the lesson, students completed a written quiz, which was submitted on paper. This marked the culmination of the differentiated and technology-integrated learning process for the topic.

2. Students' Beliefs in Learning When Differentiated Instruction Integrated with Technology is Implemented

This study explores students' beliefs about English learning when implementing differentiated instruction integrated with technology. Data were collected using a 32-item Likert scale questionnaire distributed to 150 students in four vocational school classes at SMK Negeri 3 Denpasar. The five indicators measured were foreign language aptitude, difficulty of language learning, nature of language learning, learning and communication strategies, motivations and expectations. Also, responses were analyzed numerically and categorically using ideal mean and standard deviation. This aims to classify the results into levels of belief. To visually support the distinction between belief indicators, Table 2 presents the total scores of each class based on the five belief indicators.

Table 2. Students' Beliefs Scores per Class and Indicator

No	Classes	Number of Students	Aspects of Students' Beliefs in Implementing Differentiated Instruction Integrated with Technology					Total Scores (X)
			Foreign language aptitude	Difficulty of language learning	Nature of language learning	Learning and communication strategies	Motivations and expectations	
1.	A	37	645	1114	789	1021	568	**4.137**
2.	B	38	616	1075	743	958	502	**3.894**
3.	C	37	656	1138	786	992	590	**4.162**
4.	D	38	611	1077	745	972	524	**3929**
Total scores of Aspects		150	2.528	4.404	3.063	3.943	2.184	16.122

The results indicate that among the five indicators, Difficulty of Language Learning received the highest score (4404), followed by Learning and Communication Strategies (3943). This suggests that students strongly associate

differentiated instruction with support in overcoming challenges and applying effective strategies for language learning. The Foreign Language Aptitude indicator obtained a moderate score of 2528, reflecting that students had only moderate confidence in their natural abilities to learn a foreign language. Meanwhile, the Nature of Language Learning scored 3063, showing that students generally viewed language learning as structured and attainable, aligning with constructivist perspectives. Although Motivation and Expectation recorded the lowest score (2184), it still indicated that students were motivated and held positive expectations for success when instruction incorporated technology and varied approaches. Across the classes, Class C (XI Culinary W1) achieved the highest overall score (4162), followed closely by Class A (XI Hospitality M1) with 4137, while Class B (XI Hospitality M2) obtained the lowest (3894).

The descriptive statistics further confirmed these findings. As shown in Table 13, the total belief score reached 16,122, with a mean of 107.48, which is higher than the ideal mean score of 96. This places students' beliefs in the "High" category, indicating generally positive perceptions of technology-integrated differentiated instruction. Table 14 provides more detailed distribution, showing that 79 students (60.52%) were in the High category, 59 students (38.63%) in the Moderate category, and 6 students (5.16%) in the Very High category. Only 6 students (3.17%) were in the Low category, and none were classified as Very Low. Overall, these results highlight that the majority of students demonstrated favorable beliefs regarding the integration of differentiated instruction with technology.

Discussion

The results of the study showed that English teachers at SMK Negeri 3 Denpasar implemented differentiated instruction effectively by modifying the content, process, and learning products. This is in line with Tomlinson's (2001) framework. Differentiation is not only seen in the selection of teaching materials that are tailored to students' majors such as hospitality or culinary, but also in the way assignments are processed. For example, pair work, use of laboratories, video and audio output, and how students are allowed to express their learning outcomes. This is in line with the statement from the research conducted by Goyibova et al. (2025), which observed that differentiated instruction reduces gaps in students' academic abilities and encourages inclusivity by adjusting materials and assignments. The findings of this study confirm Tomlinson's (2001) theory, which explains that learning should be designed based on students' interests, readiness, and learning profiles. Integration of technology through WhatsApp, Google Translate, Canva, YouTube, Microsoft Word, and Quizizz can also support the differentiation process, making learning more interesting and accessible.

In addition, the learning process in the observed classroom was very student-centered. The teacher encouraged active involvement through group work, peer

support, and interesting tasks that increased student collaboration and autonomy. The results of this study are in line with research conducted by Kupchyk and Litvinchuk (2020), which emphasized that group-based instruction and peer interaction in differentiated instruction can increase students' cognitive engagement and sense of belonging in the classroom. The positive classroom dynamics recorded during the study indicate that differentiated instruction effectively fosters a productive and respectful learning environment, including cooperation, mutual support, and expressive participation.

Furthermore, technology integration reinforces the benefits of differentiated instruction. Tools such as Google Translate, YouTube, TikTok, and Quizizz allow students to access information independently, explore a variety of resources, and practice language skills in an interactive way. This is in line with research conducted by Kim (2023),who argued that technology can increase accessibility, enhance engagement, and encourage learner autonomy. In addition, the flexibility of technological tools helps students overcome linguistic barriers and facilitates a personalized learning experience. Also, these findings are in line with findings from research conducted by Kupchyk and Litvinchuk (2020), who found that technology in differentiated instruction allows learners to explore content that suits their learning style and pace.

This approach challenges traditional notions of language learning difficulties. Technology integration helps reshape students' perspectives, even though they initially perceive English as a difficult subject. Students appreciate how differentiated instruction and technology support help reduce these challenges, as seen in the highest confidence scores for the "difficulty of language learning" indicator. The findings of Menon et al. (2017) support this study, highlighting how technology empowers learners to solve learning problems independently. However, this differs from the study conducted by Alavi et al. (2022), who stated that language acquisition is a long and difficult process. These difficulties can be reduced with the right teaching tools and methods as shown in this study, making language acquisition faster and more enjoyable.

The quantitative results of the questionnaire in this study confirmed that students' beliefs about English learning were in the "high" category, with an average score of 107.48 based on five belief indicators. Among these, the most dominant were difficulty of language learning and learning and communication strategies, followed by foreign language aptitude, nature of language learning, and motivation and expectation. These scores indicate that differentiated instruction integrated with technology is able to improve the technical aspects of teaching and also reshape the way students view their abilities, challenges, and potential in language learning. The high belief score in the "learning and communication strategies" indicator indicates that students feel confident in using various approaches to understand

English, especially when supported by interactive and multimedia tools. The results of this study are in line with research conducted by Istiara and Hastomo (2023), which found that strategic use of technology supports metacognitive awareness and learner independence. Also, moderate but positive scores in "foreign language aptitude" and "motivation and expectations" indicate that students are beginning to recognize their capacity to learn English effectively when instruction is tailored to their individual profiles. The lowest scores for motivation and expectations reflect that while students see value in differentiated instruction with technology, it is still positive. Likewise, continued innovation and teacher encouragement are needed to fully engage less motivated learners.

The extensive use of tools such as is able to combine game elements with educational content, which is an example of how motivation can be enhanced through engaging methods. This is in line with the explanation by Putra (2023), who explained that students' interests and beliefs are closely related to the teaching methods they prefer. Teachers can increase motivation and confidence in the learning process by choosing tools that students prefer. The practices observed at SMK Negeri 3 Denpasar confirmed that technology-enhanced differentiated instruction can be used to improve outcomes and influence students' emotional and psychological investment in learning. This study also revealed that technology-enhanced differentiated instruction broadens students' understanding of language learning as a dynamic and purposeful process. Students become more open to recognizing the role of English in supporting their future careers through different content and delivery processes, especially in the hospitality and culinary fields.

Finally, the findings of the current study have significant implications for teaching practice. It also highlights areas that still need further development, despite the success of the implementation of differentiated instruction with technology at SMK Negeri 3 Denpasar. To diversify the types of technology used, prevent learner burnout, and ensure equitable access, teachers must continue to innovate and collaborate. Student beliefs are significantly influenced by the perceived relevance, accessibility, and personalization of instruction. Students will become more empowered and self-directed if more of these elements are addressed through careful instructional design.

CONCLUSION

This study investigated the implementation of differentiated instruction integrated with technology and students' beliefs towards this learning approach in English classes at SMK Negeri 3 Denpasar. The findings in this study indicate that teachers successfully implemented integrated learning by modifying content, processes, and products according to students' majors, learning readiness, and interests. Technology tools such as WhatsApp, Google Translate, YouTube, Canva, Quizizz, and Microsoft Word are supporting tools for this implementation. These

tools can also enable teachers to personalize the learning experience, offering various forms of student output such as written, oral, video, audio. Also, these tools are able to promote more flexible access to content.

Furthermore, students' beliefs towards this learning model were found to be high with a mean score of 107.48, indicating that most students have a positive perception of learning when learning is personalized and supported by technology. This confirms previous studies that suggest that students' belief systems significantly influence their motivation, engagement, and achievement in foreign language learning. Thus, these results are in line with the expectations set out in the introduction. It was anticipated that when teachers implement differentiated learning integrated with technology, it will lead to greater learner engagement and belief in their capacity to learn English. The findings confirm this, indicating that personalized learning supports a variety of learning needs and fosters confidence and ownership among students, especially when facilitated through accessible digital tools.

In practical applications, these findings can guide teachers in developing student-centered and technology-supported teaching strategies. Also, these findings can improve teaching practices and student learning outcomes in English language education. Ultimately, the synergy between differentiated instruction and technology can meet the diverse learning needs of students and is also in line with the goals of educational transformation in the digital era. In the future, future research is expected to build on this study further by exploring how students' digital literacy levels affect the effectiveness of differentiated instruction, including more interactive platforms to expand the variety of technologies used to further enhance engagement, and comparing how context affects implementation and learner responses by conducting similar research in non-vocational or public high schools.

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