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Unlocking the Power of Technology: Navigating the Benefits of Integrating ICT in Differentiated Instruction

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A B S T R A C T

ICT integration in English as a foreign language (EFL) teaching enhances knowledge acquisition and optimizes learning processes. It facilitates differentiated instruction, addressing diverse student needs and achieving targeted outcomes. This proactive approach adapts content, processes, products, and learning environments to accommodate students' readiness, interests, and backgrounds, promoting engagement and improved academic outcomes. This study aims to explore the benefits of integrating ICT in differentiated instruction practices in English classrooms. This study uses a qualitative approach with a phenomenological design. Combining interviews with English teachers, classroom observations, and analysis of supporting documents to comprehensively understand the phenomenon. This study was conducted in three vocational high schools in Yogyakarta. The results showed that the benefits of ICT integration in differentiated instruction include improved student conceptual understanding, as evidenced by students' ability to grasp the material and express their ideas through classroom activities. Additionally, ICT increases student engagement, with students showing motivation, interest, active participation, and improved collaboration in the classroom. Another key benefit is student self-development, fostering creativity, confidence, discipline, and responsibility

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INTRODUCTION

Education in Indonesia currently focuses on implementing the new policies of the 'Merdeka' curriculum. This curriculum prioritizes learner-centered education, considering various learner characteristics. This curriculum shifts the learning approach from a previously teacher-centered model to a student-centered one. Student-centered learning requires students to develop knowledge, adapt to life changes, foster innovation in all areas, and demonstrate creativity in navigating technological advancements and the expansion of information in human life (Qorin, 2022). The reform of the educational curriculum at any level to accommodate student-centered learning has changed the paradigm of teaching and learning practices in all subjects, including the reform of English Language Teaching (ELT). The curriculum introduces the new paradigm in teaching and learning, it is Differentiated Instruction (DI). Education at any level must be tailored to the learning needs of the student. Considering the students' learning needs is essential to develop suitable and effective teaching models (Nartiningrum & Nugroho, 2020).

Concerning the advantages of differentiated instruction for learning and teaching, English language teachers should be particularly aware of how to apply Differentiated Instruction to meet the needs of their students regarding their learning styles, interests, subject areas, and other factors. Teachers should actively adjust their lesson plans, materials, learning activities, and learning outcome standards to address the students' needs (Tomlinson et al., 2003). This creates a conducive classroom atmosphere that supports the reconstruction of knowledge, skills, and attitudes, the three main pillars of educational practices. When a suitable learning environment is present, students are more likely to attain a high level of proficiency in the English language.

As the era changed, the theory of differentiation also began to emerge in parallel with the rapid growth of technological advancements (Millen & Gable, 2016). Over the past two decades, there has been a significant focus on technological tools as they have been shown to enhance learning experiences when integrated into an appropriate educational framework (Karatza, 2019). Increased accessibility to technology in schools contributes to the dynamic and evolving classroom environment. These technologies have the potential to provide differentiated instruction experiences for students and better prepare them for future educational or professional careers (Bray & McClaskey, 2013). New technologies facilitate the enhancement of accessibility, adaptation, and customization of content, resources, and educational learning environments. Additionally, they provide an almost limitless method and strategies to customize materials, learning activities, and procedures to assess and evaluate the achievement of their goals.

The integration of ICT can assist teachers in providing opportunities for integrated skills learning, particularly in English language teaching. Differentiated Instruction has been developed, implemented, and has become the focus of many studies over the past two decades (Aliakbari & Haghighi, 2014). Study on the implementation of Differentiated Instruction provides evidence that

this method of learning has effectively enhanced English language instruction (Tanjung & Ashadi, 2019).

However, Differentiated Instruction has been proposed as a means of facilitating students' learning diversity. This instructional design is intended to assist teachers in fostering meaningful learning processes within diverse classrooms, where students may exhibit varying characteristics, learning profiles, and prior knowledge (Mirawati et al., 2022). There is a gap between the ideal theory and actual conditions in Indonesian teaching and learning situations. The theory of differentiated instruction involves teachers customizing education to match students' different requirements, which is expected to result in better learning outcomes and engagement. Teachers encounter difficulties in understanding, implementing, and effectively managing differentiated instruction strategies. Based on the gap above, there should be more empirical study focusing specifically on the perceptions of EFL teachers who experience using technology integration as the assisted in the implementation of differentiated instruction. So that we can find out how ICT integration has a benefit on students

LITERATURE REVIEW

Differentiated Instruction

Tomlinson initially proposed the concept of differentiated instruction in the field of education during the early years. She proposed that teachers should create different paths for different students to learn the same material to meet the diverse needs of students in the classroom. In differentiating instruction, teachers can employ a range of methods and strategies to provide students with multiple avenues for acquiring information, comprehending ideas, and articulating their learning (Tomlinson, 2001). Differentiation aims to ensure that all students have access to a well-designed curriculum and the opportunity to become successful learners by placing them at the center of the learning process (Tomlinson et al. 2008; Tomlinson & Allan 2000). As an instructional design model, Tomlinson and Iambeau (2010) frame the key element of Differentiated Instruction:

a. Content: the knowledge, understanding, and skills students should master. The term "content" is used to refer to the knowledge, understanding, and skills (KUD) that students are expected to learn. It is important to note that it is recommended for these learning goals to remain consistent for all students in a differentiated classroom. As per the source text, teachers can distinguish between the various methods that students use to access important content.
b. Process: the activities the students use to understand and make sense of the content. The term "process" is often used interchangeably with "activities". However, activities may not align with content goals and may not require students to engage with essential knowledge, understanding, and skills. Therefore, it is recommended to use the term "sense-making" instead. Activities should be used to emphasize that what we ask students to do in the name of learning or practice should help them "own" the content, see how it makes sense, and realize how it is useful in the world outside the classroom.

c. Product: the method the students use to demonstrate understanding of key ideas, transfer of knowledge, and application of skills. A product is not something that students generate in a single lesson or because of a few activities. Instead, it is a comprehensive assessment that requires students to apply and extend what they have learned over an extended period. Tests exhibit these characteristics when they present students with complex problems related to leading and managing a differentiated classroom. These problems require students to solve them in ways that require understanding of key ideas, transfer of knowledge, and application of skills. Effectively designed authentic assessments inevitably have these characteristics.
d. Affect: how students' emotions and feelings influence their motivation and learning. Emotions and feelings are generated in the brain based on past experiences and reactions to current experiences. These benefits include an enhancement of motivation to learn, an improvement in the capacity to work with others, and an enhancement of the self-concept as a learner. Consequently, effect should be regarded as an integral component of the curriculum, rather than as a separate entity. A positive attitude towards learning and oneself as a learner creates opportunities for academic growth. Conversely, a student's negative attitude towards learning or their abilities as a learner can hinder progress. Expert teachers not only observe student behavior but also actively strive to understand the emotions that drive it. This allows them to effectively guide students in a positive direction.

In differentiated classroom instruction, teachers strive to make these elements flexible to effectively address students' needs. According to Tomlinson and Imbeau (2010), teachers modify these elements based on their assessment of students' readiness, interest, and learning profile.

a. Readiness

Readiness implies a temporary state that should change regularly because of high-quality teaching. Focusing on student readiness rather than ability is beneficial to both students and teachers. To advance academically, students must consistently engage with tasks that are sharply focused on essential knowledge, understanding, or skills. However, these tasks should not be so difficult that they are beyond the students' current level of readiness. Additionally, students should have a support system in the form of peers and/or teachers who can assist them in overcoming any difficulties and emerge from the task(s) with a greater understanding. The text already meets the desired characteristics. No changes were made.

b. Interest

Student motivation to learn is directly linked to their interest in the subject. When students are engaged in their interests, they are more motivated to learn, and their learning is enhanced. Personal interests are typically associated with a student's strengths, cultural context, personal experiences, questions, or perceived needs.

c. Learning Profile

Four key elements influence a student's learning profile and how they interact with each other as follows:

- Learning style - refers to an individual's preferred contextual approach to learning. The concept of studying encompasses a multitude of variables, including the way one studies. These variables include whether one studies alone or with a partner, whether one studies in a quiet or noisy environment, whether one studies in a bright or darkened room, and whether one studies while sitting still or moving around.
- Intelligence preference - refers to a hard-wired or neurologically shaped preference for learning or thinking. Examples of intelligence preferences include verbal-linguistic, logical-mathematical, kinesthetic, interpersonal, intrapersonal, musical-rhythmic, spatial, analytical, practical, and creative.
- Gender - Approaches to learning may be shaped by genetic or social factors, which can differ between males and females. Although individuals may not necessarily align with gender-based patterns of learning, it may be beneficial to incorporate teaching and learning methods that reflect a range of gender-based preferences. It is important to continue to enhance our understanding of the interrelation between gender and learning.
- Culture - It is important to note that culture can have a significant benefit on an individual's worldview and behavior. The term 'culture' defines the various approaches to learning that an individual's context strongly influences, as well as the unique ways in which people in that context interpret and live their lives. It encompasses a wide range of behaviors, including communication, intergenerational relations, perceptions of authority, expressions of celebration, mourning, and respect. Patterns of learning vary across cultures. It is therefore inaccurate to assume that all individuals from a particular culture approach learning in the same way as they do between genders. Therefore, it may be beneficial for student learning if teachers offer a variety of teaching and learning methods that reflect different culture-based learning preferences. To achieve this goal, educators must engage in an in-depth study of the diverse cultural backgrounds of their students to develop a comprehensive understanding of the complex interrelationship between culture and learning.

Differentiated Instruction with ICT Integration

The concept of differentiated instruction encompasses a multifaceted approach to teaching, which aims to provide students with diverse learning needs with a range of opportunities for processing information, comprehending ideas, and expressing their learning (Smith & Stephanie, 2007). The use of technology tools can facilitate the delivery of effective instruction and provide students with personalized learning environments in which they interact with software (Smith & Stephanie, 2007). Numerous technological innovations are emerging daily that potentially enhance student learning. Starting from groundbreaking technologies to innovative combinations of older technologies. Integrating Information and Communication Technology (ICT) in education has revolutionized teaching and learning by offering diverse tools and methods to enhance student engagement, collaboration, and personalized learning. When information and communication technology (ICT) is employed appropriately in an educational setting, it can enhance students' motivation, encourage active

participation, facilitate collaborative learning, and positively influence the learning process (Aziz et al., 2019). in addition, through the use of ICT, students can access personalized learning materials, make their own choices in their learning process, and track their progress (Chasanah & Prastowo, 2021). ICT can enhance the effectiveness of differentiated teaching by providing personalized, learner-centered environments (Aziz et al., 2019). ICT is useful for teachers as it allows for an adaptation of instruction to students' learning styles, interests, and readiness levels. Instructional technology enables the creation of a student-centered learning environment that supports differentiated instruction and encourages learning that extends beyond traditional methods (Jaleel & Anuroofa O.M., 2017). It also facilitates accessibility, accommodation, and modification of content, materials, and educational environments. Multimedia applications, which combine video, audio, and interactive programs, offer various types of learning resources (Shwahin, 2014). These tools offer various ways to shape content, learning activities, and processes, enabling teachers to identify and evaluate goal achievement (Karatza, 2019). A review of existing literature demonstrates that the use of ICT-based instruction can result in improvements in the quality of student assessments and increased active participation. According to a study conducted by (Palieraki & Koutrouba, 2021). Effective strategies include flexible grouping, hierarchical learning activities, and asynchronous working (Palieraki & Koutrouba, 2021). In conclusion, integrating ICT can assist in managing the learning process and promote student self-regulation (Mooij, 2007). To optimize learning, it is recommended that learning procedures and materials be differentiated, that ICT support be integrated into the design of learning materials, and that the development and learning progress of students be improved (Mooij, 2007).

METHODOLOGY

This study employed a qualitative approach with a phenomenological design. This phenomenon is referred to as the "lifeworld" in phenomenological terms (Creswell, 2013). This design is suitable for exploring the experience of the teacher's perspective on the benefits of integrating technology in implementing differentiated instruction. Because it is believed that the human experience of the daily world provides a meaningful interpretative framework for comprehending the world (Eddles-hirsch, 2015).

This study was conducted in three vocational high schools located in Yogyakarta province which applies the Merdeka Curriculum that emphasizes the use of Differentiated Instruction in accommodating the needs of students with diverse styles of learning. This study explored the experience of three Penggerak English teachers in the technology integration in the implementation of Differentiated Instruction. The participant was selected through a purposive sampling technique. The purposive sampling technique in this study entailed careful consideration of criteria and qualities that were in line with the study's objectives. The potential participants will be selected based on the criteria and needs of this study including: 1) The participant is an English teacher who became a Penggerak teacher, 2) The participant has experience in the implementation of Differentiated Instruction, 3) The participants utilize

technology integration in the implementation of Differentiated Instruction. This strategy made sure to offer insightful and valuable answers to study objectives. The data were collected through interviews, observation, and document analysis. The results of data collection were analyzed by using qualitative data analysis from Miles et al. (2014). Trustworthiness thought triangulation was also used to assess the credibility of the data.

RESEARCH RESULT

In exploring the integration of technology in implementing differentiated instruction. Based on the data obtained and analyzed, it is evident that the integration of technology in implementing differentiated instruction offers three significant benefits: enhancing students' conceptual understanding, increasing their engagement, and fostering their self-development.

Enhance Conceptual Understanding and Idea Exploration.

Based on classroom observation, when teachers adjust learning according to students' ability levels in English subjects, students show that they understand and comprehend what has been learned. For example, by providing various levels of text, students who have good English skills are given longer texts compared to students with low abilities. Then when listening activities that require students to fill in the missing sentences, the teacher provides two types of audios that students must listen to. For the first audio students must listen to conversation audio and for the second audio students must listen to short text. In this activity, students showed that they could fill in the missing sentences well. The findings from the interview data informed the teachers' perspectives on the benefits associated with these subthemes, as detailed below:

Excerpt 1

"Yes, they show that they understand the material that I convey with the help of technology. Because it is also adjusted to their level of understanding. the level of understanding here is that when there are children whose English level is not good, I adjust the content, such as in reading activities, I find texts that are easy to understand." (T1 Interview, author's translation)

Excerpt 2

"Yes, of course, they are allowed to practice and create something that requires understanding. When they have reached the level of creating, it means that their understanding is good, the maximum if we use Bloom's Taxonomy." (T3 Interview's / author's translation)

Technology integration provides opportunities for students to access all kinds of learning resources, such as e-books, video tutorials, interactive simulations, and scientific journals, which can be tailored to their needs and interests. The interview with the teacher reveals that with the assistance of ICT in implementing differentiated instruction, students can explore their ideas by searching or browsing the internet for various references. Technology also serves as a tool for them to express their ideas when given the freedom to create a product that aligns with their style. The findings from the interview data shape the teachers' perspectives on the benefits associated with these subthemes, as detailed below:

Excerpt 3

"Yes, because in this independent curriculum, it cannot be teacher-centered, it must be student-centered so you cannot be 100% free, the teacher must still guide, but the good thing is that with technology students can browse. When given an assignment to create something, students browse to find references and then express their ideas based on what they discover." (T1 Interview/author's translation)

Excerpt 4

"Yes, through the application of technology, students are helped to have their ideas through structured questions. Structured questions help them to determine the main idea of the learning. So, the prompting questions that we ask them to think and come up with ideas. Like when I show pictures about professions for example. Yes, I gave pictures of some professions and then they guessed them." (T2 Interview's/author's translation)

Excerpt 5

"When I gave the assignment, it wasn't just like "all of you have to make a poster." I gave them flexibility, they were free to use video, vlog, or make a poster. This was especially for the visual communication design (DKV) students because it's related to their field. Even if they wanted to create illustrations, that was fine too. The main point was that the task for the day was about a specific topic, for example, descriptive text, they had to describe a tourist destination in their area. They could vlog, make a video, use a poster, or even create just a brochure. It was up to them. They weren't forced to think, 'Oh, I have to make a video.' No, they had the freedom to choose because they had the flexibility." (T3 Interview's/Author's translation).

Enhance the Students' Engagement

Engagement can be defined as the level of participation of students in academic and non-academic activities and students' appreciation of schooling goals (Hu & Kuh, 2002). as the active involvement and participation of students in the learning process. Then, student engagement is defined as Desire, need, the will of the students to engage in routine school activities such as attending classes, assigning teachers' assignments, and following teachers' instruction in the classroom (Salleh et al., 2013). It encompasses a multitude of elements, including interest in the subject matter, active participation in class discussions, sustained attention to tasks, and a driving motivation to learn and achieve academic objectives. This study found the benefits of technology integration in implementing differentiated instruction on students' engagement are as follows: motivation, interest, active learning, collaboration, and communication.

Benefit on Students' Motivation

The classroom observation indicated that the students appeared to be motivated to engage with the learning activities presented in the classroom. For example, when the instructor provides audio materials for students to listen to or video materials for them to watch. The students demonstrate motivation in engaging with the learning activities. In terms of the teacher's perspective, the following observations can be made regarding this subtheme:

Excerpt 6

"For children whose English is not good, I give them short texts. So that they don't get bored. If I give them a rather long one, they are not motivated to read, sometimes some say "Mom, the text is so long" and then they read it carelessly, not digesting and understanding properly. So yes, I give texts that are in accordance with their abilities, so that they are motivated. I also give texts with vocabulary that are familiar to children. So, they don't find it difficult to interpret the text that I have given." (T1 Interview's/author's translation)

Excerpt 7

"Could motivate the students to learn, the use of technology will make students interested in participating in learning. Then they become motivated to follow the series of activities that we have designed. Yes, like I ask them to watch videos about the material to be learned. The problem is that if I explain conventionally, they get bored. So, I slip in using videos. Yes, so far, the integration of technology can increase their motivation." (T2 Interview's/Author's translation)

Excerpt 8

"Yes, when they are asked to do something, their motivation to do it is quite good here." (T3 Interview's/Author translation)

This motivation is not only based on passive participation but also on their desire to actively engage in the learning process. Technology that supports learning makes students less enthusiastic, more engaged with the material, and more motivated to achieve academic goals. Technology integration catalyzes intrinsic motivation to learn and succeed.

Benefits on Students' Interest

The classroom observation indicated that students were more engaged in classroom activities when teachers used tools like Kahoot or Quizizz, as they provided fun and competition. These interactive tools encourage active participation, instant feedback, and focus, enhancing understanding. Then, Customizing the instruction and content according to students' learning styles also increases their interest in the teaching and learning process. When the teacher presented a video, students with visual tendencies paid close attention to it. They show a focused attitude towards what they see and pay close attention to it. The findings from the interview data informed the teachers' perspectives on the benefits associated with these subthemes, as detailed below:

Excerpt 9

"I see that they become more interested when asked to focus on listening, visual children, if I give a video and then there are pictures, they will pay attention. Yes, I see that they are interested in participating in class learning." (T1 Interview's/Author's translation)

Excerpt 10

"The learning activities are more interesting because the material is tailored to their style. The use of technology also makes them interested. Like when there is a quiz using Kahoot" (T2 Interview's/Author's translation)

Excerpt 11

"When I integrate technology using a platform like Quizizz, well that makes them interested in answering the quiz in Quizizz earlier. Because Quizizz, in my opinion, has a visual preference that can make students interested. (T3 Interview's/Author's translation)

To enhance the engagement, teachers need to gain an understanding of their students' learning styles, which may include a preference for audio, video, written, or kinesthetic activities that involve movement. Despite this approach not yet being fully implemented, the teacher noted that this tailored approach to students' learning styles was more successful in increasing their interest in the lesson. Students who have visual preferences show high interest when they can participate in quizzes that are presented interactively. The attractive visual appearance of these platforms not only makes the activities more fun but also encourages students to actively participate in answering the quizzes, thus increasing their engagement in the teaching and learning processes.

Benefits on the Students' Active Learning

Students demonstrate active participation in learning when the teacher provides instructions tailored to their abilities, such as reading texts adjusted to their level of difficulty. They engage actively by answering questions listed and writing their responses on the blackboard. Additionally, when the teacher asks them to explain what they have read, they continue to show active involvement in the activity. The teacher's perspective on this subtheme is as follows:

Excerpt 12

"Yes, they are actively involved in class activities. For example, if I give them an assignment to read and then I ask them to answer questions, they look active. Like I ask them to make this number who wants to answer, then they answer. That's how it is." (T1 Interview/Author translation)

Excerpt 13

"Almost all the students who were involved in differentiated instruction could be more active during the learning." "…. If there is a quiz session, they are also very active in answering the questions. They are active because it is tailored to their interests, so to follow the activities they actively participate." (T2 Interview's/Author's translation)

Both T1 and T2 said that all students participating in differentiated instruction increase their activity in the learning process. Differentiated instruction, which uses appropriate teaching methods, materials, and strategies based on their needs, interests, and individual abilities, allows them to engage more actively. Relevant materials and approaches motivate students to participate in discussions, participate, and contribute to various learning activities. In another hand T3 utilizes the comment feature on Google sites to provide feedback on the Product differentiation that their friends did. The program fosters active student engagement by involving them in the learning process through feedback on their peers' work, fostering a collaborative learning environment. She said, as follows:

Excerpt 14

"Then they were also evaluating, because I always ask them to give a response to their friend's work and their response cannot just be "nice, good" I always ask them to give a detailed and specific response to which one is good and which one you think is cool. So, you can't just say for example, "light up my brother" it can't be "nice, good" it can't be so if you comment to a friend, it must be specific like that." (T3 Interview's/Author's translation)

Benefits on the Students' Collaborative

In the implementation of differentiated instruction, most teachers group students according to proficiency level or learning style. This has an impact on students' collaborative attitude, as they are encouraged to exchange ideas to complete tasks following the instructions provided by the teacher. This approach to grouping fosters active communication and teamwork, enabling students to enhance their understanding while also developing social and problem-solving skills as they engage with peers who may be similar or different in ability. Collaboration involves students working together on activities or learning tasks in a group small enough to ensure that everyone can participate. The findings from the interview data informed the teachers' perspectives on the benefits associated with these subthemes, as detailed below:

Excerpt 15

"They exchange ideas and help each other. When I give listed questions based on the text they have read for example. They will help each other. The utilization of technology is that they can search from Google to add references to answers, like that." (T1 Interview/Author's translation)

Excerpt 16

"Having collaborative skills with their friends. This collaborative skill is developed because I always ask them to work with friends who match their style. Yes, indeed, in the implementation of differentiated learning, grouping students is an effective way to smooth the learning process in the classroom." (T2 Interview's/Author's translation)

Excerpt 17

"Collaboration is also for teamwork or indeed not teamwork or individual work, they can ask for help from their friends. So it's more about building their character so that they want to work together with their friends" (T3 Interview's/Author's translation).

Excerpt 18

"Their attitude of collaboration has been good so far. When I ask them to do group work, they share and help each other, for example, if I ask them to answer 5 questions from the text that I have prepared, they will work together to think of a strategy of who can answer this question, etc. Later, if there is a question that they cannot answer, they will work together. Later, if there is a problem that cannot be solved, they collaborate to help so that the problem is quickly resolved. Another thing is that if I ask them to read a text, I ask them to work in groups. Then later, I asked them to "Okay, each group retell from what you have read, and present in front of the class." Later, they help each other to be able to present well in front of the class. Not only in reading activities, but listening can also be done when they are asked to watch a video with English

subtitles and then they can explain the meaning of the video." (T3 Interview's/Author's translation)

The integration of technology in the implementation of Differentiated Instruction has benefits for improving students' collaboration skills. By customizing learning experiences to meet individual needs, interests, and abilities, technology creates a supportive and motivating environment for students. They work together, help and respect each other, creating a constructive environment. In group activities, students actively share knowledge, devise strategies, and ask for help when faced with challenges. They also support each other in summarizing and retelling content in front of the class. This collaboration emphasizes cooperation and builds students' character, making them more open to working with others.

Enhance Students Self-Development

Creative

Technology offers a wide range of interactive applications, multimedia presentations, and collaborative platforms that facilitate exploring topics from different angles and developing unique ideas. These diverse technological options allow students to customize their learning experiences to align with their individual needs and interests, thereby fostering creativity. By enhancing learning with dynamic and interactive elements, technology provides new opportunities for creative thinking and innovation in the classroom. The result related to this sub-theme of benefits of integrating technology into differentiated instruction responded by the participants as follows:

Excerpt 19

"By using it, I know more about creative students. For example, when there is a group discussion and students are asked to make a presentation design, later with their creativity, some use PowerPoint, some use Canva, then some can use video." (T1 Interview's/Author's translation)

Excerpt 20

"When I gave the assignment, it wasn't just like "all of you have to make a poster." I gave them flexibility, they were free to use video, vlog, or make a poster. This was especially for the visual communication design (DKV) students because it's related to their field. Even if they wanted to create illustrations, that was fine too. The main point was that the task for the day was about a specific topic, for example, descriptive text, they had to describe a tourist destination in their area. They could vlog, make a video, use a poster, or even create just a brochure. It was up to them. They weren't forced to think, "Oh, I have to make a video." No, they had the freedom to choose because they had the flexibility" (T3 Interview's/Author's translation).

Excerpt 21

"For creativity, for example, students majoring in workshop, automotive. I ask them to make a video with their friend, a partner. Just a short video about how to change oil, or something else. The point is that it is following their automotive-related majors." (T2 Interview's/Author's translation)

Confident

The classroom observation shows that the students showed confidence in participating in classroom activities. When the teacher paid attention to the students who did not understand the material, grouped them, and provided additional explanations, it helped the students understand the lesson. The students understood the material, it built their confidence when they were asked to complete assignments and come to the front of the class to explain what they had read. Tailoring the material to their abilities and learning styles also had a positive impact on student confidence. Then the integration of technology allowed students to access a range of resources and learning tools that are tailored to their specific requirements. The use of technology platforms encourages students to search for information from a variety of sources, thereby facilitating their comprehension of the subject matter. Once students have acquired the knowledge and skills necessary to comprehend the subject matter, they tend to become more confident in articulating their ideas and perspectives on the topic. The result related to this sub-theme of benefits of integrating technology into differentiated instruction responded by the participants as follows:

Excerpt 22

"They were not afraid to present because they have prepared well." (T1 Interview's/Author's translation)

Excerpt 23

"When the materials and tasks are tailored to students' needs and abilities, they will automatically understand what they have learned. So they will not be afraid to be wrong when answering questions, doing assignments is also confident because they feel supported." (T2 Interview's/Author's translation)

Excerpt 24

"Yes, of course, they were not afraid. They were not afraid and became responsible, which means this. The content they wrote was sometimes, for example, how can you say that 70% of Indonesians smoke, where is the data, we have to know the responsibility. Later they will try to find data "Oh yes miss this there is data" Okay write down the data where you got the source. Well, they will look for it, and write it down. So not just writing that "70% of the Indonesian population smokes" is irresponsible, but if there is valid data, there is already research and you write it down. That will help you write things that can be accounted for so it's there." (T3 Interview's/Author's translation)

Discipline

Technology integration has a positive benefit on students' discipline in completing assignments in class. When teachers give assignments and ask students to submit them through Google Classroom, students' time management in submitting assignments is very good. Setting the time as a reminder for students to complete the assignment makes them more disciplined. Moreover, in other situations, when teachers give listening assignments that are tailored to students' English proficiency, students can do it easily and are disciplined in collecting them. In another situation, when the teacher asked them to write a descriptive text and gave them free choice of topics about people, places, or animals, they completed the task well and remained disciplined in submitting it.

The result related this sub-theme of benefits of integrating technology into differentiated instruction responded by the participants as follows.

Excerpt 25

"Their positive attitude is that their level of discipline has increased. Their discipline in collecting assignments. They no longer need to be chased when they see their friends collecting them, the others will collect them too. That is the most obvious thing to see is discipline in collecting assignments like that" (T3 Interview's/Author's translation)

Excerpt 26

"Yes, when I set a deadline, for example, on such a date, the children are in time to collect it, especially since I use Google Classroom which they can all access anytime and collect anywhere without having to collect it directly from me. This is very helpful and easy for me, without having to wait to collect it when there is a meeting with me again." (T1 Interview's/Author's translation)

Excerpt 27

"For their discipline, yes, they were disciplined to carry out what I assign. When I ask them to listen, read, or write texts, they seem disciplined in carrying it all out, they follow directions well. When I give them tasks according to their interests, they are happy and enjoy doing it. Especially if there is a quiz, they feel like they are competing to get a high score." (T1 Interview /Author's translation)

Excerpt 28

"When they are happy with the activities I set in class, they will be disciplined to follow them, starting from building their knowledge first, then after that doing a series of tasks to hone their knowledge. Yes, they seem disciplined to follow it all, especially when the activities carried out are tailored to their needs." (T2 Interview's/Author's translation)

Students follow the learning process consistently and stay disciplined when they enjoy the activities designed by the teacher. This discipline is reflected in their commitment to building their knowledge and continuing with tasks. Tailoring activities to students' needs and interests makes them feel valued and engaged, encouraging them to follow the learning process with diligence and structure.

Responsible

When students are given the freedom to create texts on the topic of their choice, they show an attitude of responsibility for what they have chosen. This shows that students are responsible for completing the assignment and ensuring that they meet the teacher's expectations. This responsibility is reflected in their dedication to researching, organizing, and presenting their ideas effectively. By allowing them to choose their topics, students become more accountable for their work and understand that their choices directly affect the quality and outcome of the assignment. They contribute to a conducive learning environment by respecting the rights of classmates and teachers. This responsibility is evident in their ability to admit mistakes, learn from experiences, and continuously improve themselves. The result related to this sub-theme of benefits of integrating technology into differentiated instruction responded by the participants as follows:

Excerpt 29

"Because, they have chosen the task by themselves "Miss me poster" because I like Miss posters, so I made a poster. Because you like it, you must be responsible for your choices. Miss, I chose to blog why "Yes because I like blogging miss" so go ahead. But the content is about descriptive text so it's all about descriptive text. The content is the same, differently, the packaging is different, the presentation packaging is different." (T3 Interview's/Author's translation)

Excerpt 30

"The sense of responsibility arises when children are given a burden of tasks, usually. I see that when there is a task, they are responsible for completing it." (T2 Interview's/Author's interview)

DISCUSSION

The integration of technology in the implementation of differentiated instruction offers numerous benefits, which can be correlated with several key themes: benefits in enhancing students' conceptual understanding and idea exploration, benefits of the students' engagement which includes motivation, interest, active learning, and collaborative. Lastly, benefits for the student's self-development include creativity, confidence, discipline, and responsibility.

The integration of technology gives benefits to the students when it assists in the implementation of differentiated instruction. The material that suits the students' interest, readiness, and learning profile makes the students understand the material. The concept of differentiated instruction posits that the optimal mode of instruction is tailored to the specific needs of the learner, to maximize their potential and abilities (Tomlinson, 2000). When the material being taught is aligned with the students' interests, readiness, and learning profiles, students will demonstrate enhanced comprehension and proficiency in learning new materials. It has been demonstrated that this approach facilitates increased intellectual growth and interest in the subject, enhanced understanding of the concept of student-centered learning, and an effective approach that could enable students from diverse backgrounds to learn and make better progress (Andini, 2022; Hung; 2015, Joseph et.al., 2013; Valiandes, 2015)

The use of interesting and interactive tools maintains the students' interest and motivation in the learning process. In the context of differentiated instruction, where learning is tailored to the student's individual needs, interests, and abilities, the use of attention-grabbing tools, such as technology, visual media, or interactive activities, has been demonstrated to strengthen the students' engagement. The use of applications such as Quizizz and Kahoot has been demonstrated to enhance the learning experience, fostering engagement and motivation among students. By ensuring that these tools are relevant and interesting to students, teachers can establish a dynamic and responsive learning environment that not only maintains students' interest but also encourages active involvement in the learning process. The implementation of differentiated instruction based on students' existing interests has been demonstrated to enhance engagement, motivation, and the ability of students to connect the

material being taught with their existing value systems (Santangelo & Tomlinson, 2009).

Then, the integration of technology enhances the students' collaborative attitude in classroom activities. When it deals with Differentiated Instruction, most of the teachers group the students based on their needs and abilities. The integration of technology facilitates the implementation of interactive activities, such as group discussions and presentations, which serve to reinforce active and collaborative learning. This allows students to learn in an environment that is both comfortable and natural, which in turn encourages better cooperation and the development of social skills. Furthermore, educators have highlighted the significance of fostering a collaborative attitude not only in the context of teamwork but also in individual work situations, where students can help one another. As noted by (Hung, 2015), it found that most students and teachers surveyed expressed positive views about the DI experience, which involved collaboration between the teacher and students, as well as among students.

Then, the integration of technology in differentiated instruction environments has been observed to facilitate the growth of collaborative abilities and social and emotional competencies, which are crucial for success beyond the classroom. Previous study by (Osifo, 2019) found that the utilization of MALL apps and Web 2.0 tools in differentiated EAP classes in higher education facilitates student learning in several key areas, including feedback, motivation, collaboration, pace, multi-modality, and research skills. Furthermore, it allows students to select the activity and assessment that best aligns with their individual needs and abilities.

Technology integration has created interactive applications, multimedia presentations, and collaborative platforms that encourage student creativity by allowing exploration of topics from multiple perspectives. This freedom to select appropriate media for assignments enhances students' technical abilities and critical thinking. Giving a choice to the learners regarding what and how they want to learn to cultivate students' motivation, engagement, and creativity (Aziz et al., 2019). For this reason, teachers should consider that provided options are based on the learners' needs, interests, or learning styles. Creative individuals tend to explore various methods and tools to effectively communicate their ideas. The use of technology in education has been shown to enhance creativity by providing students with a variety of platforms through which they can demonstrate their understanding, these include multimedia presentations, interactive simulations, and creative projects (Eden et al., 2024). Teachers recognize that integrating technology into the learning process helps assess student creativity more effectively, especially when students are encouraged to select tools and media, they fined most effective for task completion. As mentioned by Teacher 2, she allows students to choose how they deliver the assignment given by the teacher, they can deliver it by making a video vlog, poster, or written text. As (Mirawati et al., 2022) stated if a student likes to tinker with visual editing, assignments in the form of recorded presentations or creative posters would engage them better than live impromptu presentations in class. The use of technological tools such as Canva and educational video editing

applications allows for the creation of visually appealing and engaging content (Fitria, 2022) which not only aids their comprehension but also boosts their creative skills (Fajariyah et al., 2023).

The integration of technology in differentiated instruction environments has been demonstrated to foster enhanced confidence skills in students. A supportive learning environment and thorough preparation enhance students' confidence in presenting and expressing their views. They demonstrate greater courage in expressing opinions and seeking assistance when confronted with challenging tasks. (Tomlinson & Moon, 2013) state that differentiated instruction is a strategy that can enhance students' confidence in speaking. They employ a variety of media and strategies to motivate students, helping them become confident, active, and creative. The use of technology provides students with access to a multitude of learning resources, which in turn enhances their understanding and confidence in expressing ideas. This combination of confidence and communication skills provides students with a robust foundation upon which to confront the challenges inherent in the learning process. This is in line with the study conducted by (Arianto et al., 2023) the two English teachers effectively built students' confidence through Differentiated Instruction in the speaking classroom, ensuring they enjoyed the activities provided and were more confident in speaking English due to the teachers' tailored lessons based on their interests and abilities.

Based on the analysis shown that Students who demonstrate responsibility are committed to academic work, school rules, and behavior. They complete assignments in a timely manner, obey rules, and maintain a positive attitude toward learning. Furthermore, they contribute to a conducive learning environment by respecting the rights of classmates and teachers. It also shows that the integration of technology enhances the students' discipline, particularly regarding the submission of assignments. When students observe their peers completing assignments, they are automatically motivated to do the same. Furthermore, the automated reminder system assists them in maintaining discipline without the necessity for direct reminders from the teacher. These positive attitudes suggest that students are beginning to recognize the significance of responsibility and punctuality in academic tasks, which reflects the efficacy of learning strategies employed by teachers to enhance student discipline and responsibility. In the approach described by Teacher 3, students are afforded autonomy to select tasks based on their interests, such as the creation of posters or vlogs, which must nevertheless remain aligned with the prescribed content, for instance, descriptive text. This approach emphasizes fostering students' sense of responsibility and creativity, while simultaneously enhancing their engagement and motivation. This is in line with (Tomlinson, 1999; Tomlinson, 2014) Differentiated instructions would increase self-awareness and take on more learning responsibility for an individual because they are pushed to take responsibility for them to succeed in learning, understand the learning process deeper, and learn flexibly. Technology plays a significant role in differentiated instruction, enabling students to select a delivery method that aligns with their learning style, while still facilitating the achievement of learning

objectives and ensuring that students are responsible for the outcomes of their learning. As Zeng, (2020) points out, technology allows students to "make choices of when, what, and how to learn based on their own proficiency levels, goals and learning styles" with the "affordance of the time to think and the possibility for feedback".

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The benefits of integrating ICT in differentiated instruction for students reveal that this approach enhances students' conceptual understanding and idea exploration, increases engagement, and supports self-development. Technology allows teachers to deliver content that is tailored to students' learning styles, abilities, and interests, resulting in more beneficial learning. Technological tools like learning management systems, educational apps, and gamified content encourage active participation, making lessons more interactive and engaging. These tools also provide students with opportunities to practice skills at their own pace. Technology also fosters self-directed learning by providing students with access to two resources beyond the classroom, enabling independent exploration. This supports individual academic growth and helps students develop important life skills such as self-regulation, problem-solving, and time management.

Recommendations

It is recommended that teachers engage in ongoing professional development to enhance their technological proficiency. This may entail participation in workshops, online courses, and peer monitoring initiatives. Keeping up to date with digital tools and teaching methodologies allows teachers to better meet the diverse needs of students. The use of game-based learning applications, such as Kahoot and Quizizz, in conjunction with creativity tools, such as Canva, and educational video editing software, can enhance the dynamism and interactivity of lessons.

FURTHER STUDY

In this study, researchers only focus on teacher experience in the benefit of integrating ICT in the implementation of differentiated instruction on vocational high school students in and the setting is in Yogyakarta. Thus, it is highly recommended that future researchers conduct a study on Senior High School students, Junior High School students, and Elementary students. then, another researcher could conduct the research in another region.

REFERENCES

Aliakbari, M., & Haghighi, J. (2014). Impact of Differentiated Instruction Strategies and Traditional-Based Instruction on the Reading Comprehension of Iranian EFL Students. RALs, 5(1), 109–129.

Andini, D.W. (2022). Differentiated Instruction: Solusi pembelajaran dalam keberagaman siswa di kelas inklusif. Trihayu:Jurnal Pendidikan Ke-SD-An, 2(3), 340-349. https://doi.org/10.30738/trihayu.v2i3.725

Arianto, R. S., Juhana, J., & Ruminda, R. (2023). Building Students' Confidence in Speaking English through Differentiated Instruction. Lectura : Jurnal Pendidikan, 14(2), 276–287. https://doi.org/10.31849/lectura.v14i2.14806

Aziz, A. K., Dostál, J., & Wang, X. (2019). ICT integration for differentiating instructional strategies to achieve the desired learning in students. ACM International Conference Proceeding Series, 1991, 103–108. https://doi.org/10.1145/3371647.3371665

Bray, B., & McClaskey, K. (2013). Personalize learning. Learning & Leading with Technology, 5191(May), 12–19. http://www.my-ecoach.com/online/resources/925/PersonalizationvsDifferentiationvsIndividualization.pdf

Chasanah, U., & Prastowo, A. (2021). Study the ICT-Based Tutorial Model for Upper-Class of Elementary School in the Perspective of Constructivist Approach. Madrasah: Jurnal Pendidikan Dan Pembelajaran Dasar, 13(2), 142–156. https://doi.org/10.18860/mad.v13i2.11297

Chima Abimbola Eden, Onyebuchi Nneamaka Chisom, & Idowu Sulaimon Adeniyi. (2024). Harnessing technology integration in education: Strategies for enhancing learning outcomes and equity. World Journal of Advanced Engineering Technology and Sciences, 11(2), 001–008.https://doi.org/10.30574/wjaets.2024.11.2.0071

Creswell, J. W. (2013). Research Design: Qualitative, Quantitative, and Mixed Methods Approach (4th ed.). SAGE Publications.

Eddles-hirsch, K. (2015). Phenomenology and Educational Research. International Journal of Advanced Research (The University of Notre Dame Australia), 3(8), 251–260. https://researchonline.nd.edu.au/cgi/viewcontent.cgi?referer=https://www.google.com.pk/&httpsredir=1&article=1172&context=edu_article

Fajariyah, L. A., Retnawati, H., & Madya, S. (2023). Exploring Students' Diversity in a Differentiated Classroom. LEARN Journal: Language Education and Acquisition Research Network, 16(2), 205–219.

Fitria, T. N. (2022). Using Canva As Media for English Language Teaching (Elt) in Developing Creativity for Informatics Students'. ELT Echo : The Journal of English Language Teaching in Foreign Language Context, 7(1), 58. https://doi.org/10.24235/eltecho.v7i1.10789

Hu, S., & Kuh, G. D. (2002). Being (dis)engaged in educationally purposeful activities: The influences of student and institutional characteristics. Research in Higher Education, 43(5), 555–575. https://doi.org/10.1023/A:1020114231387

Hung, Y. (2015). Tesol International Journal Teaching English to Speakers of Other Languages (Vol. 10, Issue 2). http://www.tesol-international-journal.com

Jaleel, S., & O.M., A. (2017). A Study on the Relationship between Self Directed Learning and Achievement in Information Technology of Students at Secondary Level. Universal Journal of Educational Research, 5(10), 1849–1852. https://doi.org/10.13189/ujer.2017.051024

Joseph, S., Thomas, M., Simonette, G., & Ramsock, L. (2013). The impact of differentiated instruction in a teacher education setting: successes and challenges. International Journal of Higher Education, 2(3), 28–40.

Karatza, Z. (2019). Information and communication technology (ICT) as a tool of differentiated instruction: an informative intervention and a comparative study on educators' views and extent of ICT Use. International Journal of Information and Education Technology, 9(1), 8–15. https://doi.org/10.18178/ijiet.2019.9.1.1165

Miles, M. B., Huberman, A. M., & Saldana, J. (2014). Qualitative Data Analysis: A Methods Sourcebook (3rd ed.). SAGE Publications.

Millen, R. A., & Gable, R. (2016). New era of teaching, learning, and technology: Teachers' perceived technological pedagogical content knowledge and self-efficacy towards differentiated …. K-12 Education. https://core.ac.uk/download/pdf/303926307.pdf

Mirawati, I. G. A., Suwastini, N. K. A., Haryanti, N. D., & Jayantini, I. G. A. S. R. (2022). Differentiated Instructions: Relevant Studies on Its Implementation. Prasi, 17(1), 11–21. https://doi.org/10.23887/prasi.v17i1.41867

Mooij, T. (2007). Design of educational and ICT conditions to integrate differences in learning: Contextual learning theory and a first transformation step in early education. Computers in Human Behavior, 23(3), 1499–1530. https://doi.org/10.1016/j.chb.2005.07.004

Nartiningrum, N., & Nugroho, A. (2020). Online Learning amidst Global Pandemic: EFL Students' Challenges, Suggestions, and Needed Materials. ENGLISH FRANCA : Academic Journal of English Language and Education, 4(2), 115. https://doi.org/10.29240/ef.v4i2.1494

Osifo, A. (2019). Improving collaboration in blended learning environments through differentiated activities and mobile-assisted language learning tools. Proceedings of the 15th International Conference on Mobile Learning 2019, ML 2019, 3–10. https://doi.org/10.33965/ml2019_201903l001

Palieraki, S., & Koutrouba, K. (2021). Differentiated instruction in information and communications technology teaching and effective learning in primary education. European Journal of Educational Research, 10(3), 1487-1504. https://doi.org/10.12973/eu-jer.10.3.1487

Salleh, A. M., Desa, M. M., & Tuit, R. M. (2013). The relationship between the learning ecology system and students' engagement: A case study in Selangor. Asian Social Science, 9(12 SPL ISSUE), 110–117. https://doi.org/10.5539/ass.v9n12p110

Santangelo, T., & Tomlinson, C. A. (2009). The application of differentiated instruction in postsecondary environments: benefits, challenges, and future directions. International Journal of Teaching and Learning in Higher Education, 20(3), 307–323. http://www.isetl.org/ijtlhe/

Shofiya, A., & Qorin, A. (2022). International Conference on Studies in Education and Social Sciences Students' Perceptions of Implementing Independent Learning-Independent Campus Curriculum: Benefits and Challenges. 2020, 14–25. www.istes.org

Smith, G.E., & Stephanie, T. (2007). Differentiating Instruction with Technology in K-5 Classrooms. International Society for Technology in Education (ISTE).

Tanjung, P. A., & Ashadi, A. (2019). Differentiated Instruction in Accommodating Individual Differences of Efl Students. Celtic: A Journal of Culture, English Language Teaching, Literature and Linguistics, 6(2), 63–72. https://doi.org/10.22219/celtic.v6i2.9941

Tomlinson, C. A. (1999). The Differentiated Classroom: Responding to The Needs of All Learners. ASCD.

Tomlinson, C. A. (2001). How to Differentiate Instruction in Mixed-Ability Classrooms (2nd ed.). ASCD.

Tomlinson, C. A. (2014). The Differentiated Classroom: Responding to The Needs of All Learners (2nd ed.). ASCD.

Tomlinson, C. A., & Allan, S. D. (2000). Leadership for Differentiating Schools & Classrooms. Hawker Brownlow Education.

Tomlinson, C. A., & Imbeau, M. B. (2010). Leading and Managing A Differentiated Classroom. ASCD.

Tomlinson, C. A., & Moon, T. R. (2013). Assessment and Student Success in a Differentiated Classroom. ASCD.

Tomlinson, C. A., Brighton, C., Hertberg, H., Callahan, C. M., Moon, T. R., Brimijoin, K., Conover, L. A., & Reynolds, T. (2003). Differentiating instruction in response to student readiness, interest, and learning profile in academically diverse classrooms: A review of literature. Journal for the Education of the Gifted, 27(2–3), 119–145. https://doi.org/10.1177/016235320302700203

Tomlinson, C. A., Brimijoin, K., & Narvaez, L. (2008). The Differentiated School: Making Revolutionary Changes in Teaching And Learning. ASCD.

Valiandes, S. (2015). Evaluating the impact of differentiated instruction on literacy and reading in mixed ability classrooms: quality and equity dimensions of education of effectiveness. Studies in Educational Evaluation, 45, 17-26. https://doi.org/10.1016/j.stueduc.2015.02.005

Zeng, S. (2020). The Potential of Online Technology for Language Learning. English Language Teaching, 13(10), 23. https://doi.org/10.5539/elt.v13n10p23