

## Beyond Uniformity and Toward the Strategic Significance of Differentiated Instruction in Distance Learning

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### Abstract

This study endeavours to delineate the effectiveness of differentiated instruction in distance education by critically investigating the difficulties encountered during the implementation process. The research conducted utilizing the literature review method, explored how the determinants such as digital inequality, pedagogical knowledge deficiencies, and digital literacy put an impact on teaching processes in distance education. The results of the research accentuate that digital infrastructure deficiencies and differences in digital literacy levels negatively affect students' success and teachers' pedagogical knowledge deficiencies limit their ability to implement differentiated instruction. The findings in the literature emphasize the importance of strengthening digital literacy training and teachers' participation in continuous professional development programs. As a theoretical framework, studies on teaching theories and digital inequality were examined, and the role of differentiated instruction strategies in distance education was detailed. This study reveals that in order for differentiated instruction to be more effective in distance education, digital inequalities should be eliminated, pedagogical knowledge levels should be increased and digital literacy training should be strengthened.

### 1. INTRODUCTION

The unprecedentedly ever-increasing rapid development of technology and its integration into education have transformed traditional learning environments into more flexible, effective, and dynamic online platforms. Distance education, which was once an alternative method for a certain group, has become a fundamental learning approach, especially with

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and during the COVID-19 pandemic (Bozkurt et al., 2020). While this transformation offers significant opportunities in terms of accessibility and inclusiveness, it has also brought about various challenges to meet the diverse needs of students in virtual environments. Differentiated instruction, a student-centered approach, stands out as an effective pedagogical method that offers solutions to these challenges (Tomlinson, 2017). Differentiated instruction is based on the development of strategies proper to students' learning styles, readiness levels, interests, and individual needs (Hall et al., 2003). In the context of distance education, the fact that students have quite different experiences due to the factors such as their technological competence and socioeconomic status makes the implementation of this method even more important (Powell & Kusuma-Powell, 2011). Research reveals that differentiated instruction increases student motivation and achievement by meeting unique and diverse individual learning needs (Tomlinson & Moon, 2013). To give an example, thanks to adaptive learning technologies, teachers can provide students with individualized learning experiences, which strengthens and empowers students' sense of autonomy and competence (Heacox, 2012). However, it is needless to accentuate the fact that there are still several obstacles to implementing differentiated instruction in distance education. One of the biggest challenges is that teachers do not have sufficient training and preparation to utilise these methods effectively in online environments (Subban, 2006). Teachers have difficulty setting up a balance between meeting curriculum requirements and designing individualized learning plans (Santangelo & Tomlinson, 2012). What is more, the fact that technological tools that support differentiated instruction are not equally accessible to all students poses a significant obstacle, especially for students from disadvantaged socioeconomic groups (Bozkurt et al., 2020).

The role of technology in supporting differentiated instruction is extremely important. Learning management systems (LMS) such as Moodle and Blackboard allow teachers to monitor student performance and provide content tailored to individual needs (Alghamdi, 2022). However, the successful implementation of these tools requires not only technical skills but also a deep understanding of the pedagogical principles that support differentiated instruction (Tomlinson, 2017). The importance of differentiated instruction in distance education is emphasized in many studies in the literature. Tomlinson and Moon (2013) state that this method alleviates problems such as isolation and loss of motivation associated with online learning by meeting the individual needs of students. Santangelo and Tomlinson (2012) argue that differentiated instruction adds equity to education by providing students with access to meaningful learning

experiences regardless of their abilities or circumstances. These findings, when combined with the fact that inequalities in access to resources and support systems in distance education can increase existing imbalances, further increase the importance of differentiated instruction (Bozkurt et al., 2020).

Education systems are critical building blocks that support not only the process of acquiring knowledge but also the social, emotional, and personal development of individuals. In this context, the methods and approaches used in education directly affect the quality of learning outcomes. Today's educational paradigms have turned to methods that aim to maximize the potential of each student by taking individual differences into account. Differentiated instruction, which is at the forefront of these methods, aims to provide a customized teaching process according to the learning needs, interests, readiness levels and learning styles of students (Tomlinson, 2017). Especially in classes where individual differences are intense, this approach has the potential to make learning processes more inclusive and effective (Subban, 2006).

The applicability of differentiated instruction in the context of distance education is the subject of extensive discussions at both theoretical and practical levels. Theoretically, this approach can encourage the active participation of each student by offering them a variety of content, processes, and products proper for their individual learning process. In practice, the implementation of this process may be limited by factors such as teachers' digital literacy levels, time management skills, and access to technological tools (Santangelo & Tomlinson, 2012). However, in order for students to benefit from differentiated instruction strategies in a distance education environment, they must have the skills to use digital tools effectively.

In this context, it is important to conduct a comprehensive review of the applicability of differentiated instruction in distance education environments. Differentiation in education reveals that some of the difficulties encountered in traditional face-to-face classrooms can be reduced with digital tools. For example, learning management systems such as Moodle provide teachers with the opportunity to create content proper for individual student needs, monitor student progress, and provide feedback (Alghamdi, 2022). However, in order for these digital tools to be used effectively, teachers' competencies in using technology need to be increased (Hart, 2018).

### **1.1.The Place and Importance of Differentiated Instruction in Education**

Differentiated instruction is a teaching philosophy that aims to shape students' learning experiences according to their individual needs. This approach includes diversified teaching processes according to students' readiness levels, learning styles and interests (Heacox, 2012). Especially in classes with heterogeneous student groups, differentiated teaching methods are considered an effective tool in both increasing academic success and strengthening students' motivation to learn (Tomlinson, 2017). The basic basis of this approach is based on the view that individual differences should be taken into account in education. Students' learning styles, cognitive capacities, past knowledge, and interests may differ. Differentiated instruction aims to ensure that each student learns in the best way possible by placing these differences at the center of the learning process. However, this method is of foremost importance not only in classroom practices but also in distance education environments (Powell & Kusuma-Powell, 2011).

### **1.2.Distance Education and Differentiated Instruction**

Distance education refers to a learning process supported by technological tools where students and teachers are not physically present in the same environment. The flexible structure of this system has caused a rapid transformation in the global education system, especially during the COVID-19 pandemic (Bozkurt et al., 2020). However, the success of distance education depends not only on the technological infrastructure but also on the pedagogical approaches used. At this point, integrating differentiated teaching strategies into the distance education environment offers an important opportunity both to meet the individual learning needs of students and to increase their participation in the learning process. Differentiated instruction consists of three main elements: content, process and product (Tomlinson, 2017). Content represents the information that students need to learn and can be adapted according to individual needs. In distance education, these differences can be easily provided by presenting materials to students at diverse levels through digital platforms. For example, presenting the same course with both visual and written materials through a learning management system (LMS) appeals to different learning styles (Alghamdi, 2022). The process refers to the methods that students follow in their learning journey. Differentiating processes in distance education makes it possible to offer tasks customized to students' interests and learning speeds. For example, a problem-solving-based activity can be designed for one group of students, while project-based learning opportunities can be

offered to another group of students. Online tools and applications provide convenience to teachers in this process. For example, Google Classroom offers an effective platform for managing students' individual and group tasks.

The product refers to the work that students produce at the end of the learning process. Differentiating products in distance education allows students to create learning outcomes according to their own abilities and preferred working methods. For example, while some students prepare a written report, others may prefer to create a video presentation or infographic. Such applications allow students to develop their creativity and increase their individual success (Powell & Kusuma-Powell, 2011). However, there are some difficulties in implementing differentiated instruction in distance education. The most important of these is the inadequacy of teachers' digital pedagogical skills. Differentiated instruction requires teachers to understand students' individual differences and integrate these differences into the teaching process. However, in order for this process to be successfully implemented in a distance education environment, teachers need to be able to use digital tools effectively (Hart, 2018). Especially in low-income areas, basic problems such as technological infrastructure and internet access can prevent the spread of such applications (Bozkurt, 2020).

On the other hand, student motivation is also a crucial factor affecting the success of differentiated instruction in distance education. In distance education, the teaching process must be both interesting and accessible in order for students to actively take part in the learning process. Differentiated instruction can offer an effective strategy to increase this motivation. For example, setting individual goals for students and providing feedback on the process of achieving these goals can increase students' commitment to the learning process (Subban, 2006). In order to increase the applicability of differentiated instruction in distance education, digital tools must be designed and used correctly. For example, instructional management systems have immense potential for monitoring students' progress and providing individual feedback. In addition, teachers' participation in professional development programs and learning how to integrate differentiated instruction strategies into digital environments plays a vital role in the success of this process (Santangelo & Tomlinson, 2012). As a result, the successful implementation of differentiated instruction in distance education is a valuable tool in meeting the individual needs of students as well as ensuring equality in education. Therefore, further research and implementation studies in this field can reveal how differentiated instruction strategies can be used more effectively in distance education environments.

This research aims to make significant contributions to the field of education by examining how differentiated instruction strategies can be implemented in distance education environments. In the literature, studies on differentiated instruction are generally focused on the context of face-to-face education. This study aims to evaluate the effects of differentiation strategies in the context of the opportunities and challenges offered by distance education. The findings of the study can guide teachers and educational policy makers to use differentiated instruction strategies more effectively in distance education. As a result, in order to effectively implement differentiated instruction in distance education, both teachers and students need to have their digital skills increased. In addition, effective use of digital tools can ease the consideration of individual needs in instructional design. In this context, understanding the potential of differentiated instruction strategies in distance education and conducting further research on this subject is of foremost importance for the future of education systems.

This study aims to address the importance of differentiated instruction in distance education considering the existing body of the related literature. The study aims to provide crucial information on how to create inclusive and effective learning environments in the digital age by examining the benefits, challenges, and implementation processes of this approach in detail.

### **1.3. Research Questions**

This study seeks answers to the following questions in order to understand and draw a clear picture of the importance of differentiated instruction within the scope of distance education and to evaluate the contributions of this approach to educational processes:

- What are the impacts of differentiated instruction strategies in distance education on students' academic achievement, motivation and participation levels?
- What are the difficulties encountered during/in the implementation of differentiated instruction in distance education and what solutions can be offered to overcome these difficulties?

## **2.A REVIEW OF THE LITERATURE**

Differentiated instruction has come into existence as a pedagogical approach that aims to adapt the teaching process by taking the individual differences of students into consideration meticulously. This approach is believed to play a pivotal role in meeting the different learning needs of students, especially in distance education environments. Based on the

existing body of the recent studies conducted, it is discovered that on a global scale, educators, scientists, and policy makers have examined the most compelling impacts and implementation methods of differentiated instruction in distance education.

### **2.1. The Definition and Importance of Differentiated Instruction**

Differentiated instruction involves adapting the teaching process according to the individual characteristics of students, such as their readiness levels, interests, and learning styles. This approach aims to organize teaching methods and materials accordingly, taking how each student learns best into account (Tomlinson, 2017). Especially in distance education, as the individual differences of students become more apparent, the importance of differentiated instruction strategies increases.

### **2.2. Differentiated Instructional Practices in Distance Education**

Differentiated instructional practices in distance education have diversified thanks to the opportunities offered by the newly emerging and ever-increasing technology along with novel, up-and-coming and burgeoning instructional trends based on advancements in technology. Learning management systems (LMS) and other digital platforms allow teachers to offer individualized content to students. For example, platforms such as Moodle help teachers monitor students' progress and provide materials tailored to their needs (Alghamdi, 2022). In addition, the use of differentiated instruction strategies in online learning environments is effective in increasing students' motivation and participation. Karadayı Evyapan (2021) states that the use of differentiated instruction strategies in the distance education process positively affects students' success, especially in mathematics classes.

### **2.3. Research on the Effectiveness of Differentiated Instruction**

Research conducted in recent years emphasizes the positive effects of differentiated instruction on students' academic achievement and motivation. For example, Subban (2006) states that differentiated instruction enables students to take part more actively in the learning process and increases their academic success. Similarly, in their study, Santangelo and Tomlinson (2012) state that teachers' differentiated instruction practices enrich students' learning experiences and increase the quality of learning outcomes. A study conducted in Türkiye examined the effects of differentiated instruction practices on the academic success of middle school students. This study

shows that differentiated instruction strategies are effective in increasing student achievement (Altay Nacar Güzel & Dös, 2024).

#### **2.4. Implementation Processes and Difficulties Encountered**

Various difficulties are encountered in the process of implementing differentiated instruction in distance education. Teachers need to have sufficient training and preparation to use this method effectively. However, teachers' lack of sufficient knowledge and skills in differentiated instruction can create obstacles in the implementation process (Subban, 2006). In addition, lack of technological infrastructure and differences in students' digital literacy levels can also negatively affect the implementation process. The difficulties experienced by students, especially those from disadvantaged socioeconomic groups, in accessing technological tools can reduce the effectiveness of differentiated instruction (Bozkurt et al., 2020).

#### **2.5. The Impact of Differentiated Instruction on Student Engagement**

Differentiated instruction strategies play an influential and transformative role in increasing students' motivation and participation in the course. Content adapted to students' interests and learning styles increases their interest in the course and ensures more active participation in the learning process (Heacox, 2012). In addition, differentiated teaching practices contribute to students' development of self-regulation skills. Students' ability to control their own learning processes and work with materials adapted to their needs increases their motivation to learn (Tomlinson & Moon, 2013).

#### **2.6. The Importance of Differentiated Teaching in Terms of Equality and Inclusion in Education**

Differentiated teaching is considered a valuable tool in ensuring equality and inclusiveness in education. Teaching strategies adapted to the individual needs of each student ensure that they receive help from education equally. This situation plays a critical role in eliminating inequalities arising from students' different socioeconomic and cultural backgrounds, especially in distance education (Powell & Kusuma-Powell, 2011).

### **3.METHOD**

This study adopted a qualitative method to understand the transformative impacts of differentiated instruction on distance education. The literature review was implemented and utilised as the research method as it is highly regarded as an effective, influential and pivotal method to systematically

analyze and evaluate the existing information on a specific topic (Hart, 2018). This method aims to provide a general perspective by compiling the findings obtained from the previous studies carried out on differentiated instruction within the scope of distance education.

### **3.1. Research Process and Data Collection**

In the study, national and international studies conducted in recent years on differentiated instruction in distance education were examined meticulously. In this direction, studies published between 2018 and 2024 were accessed from academic databases such as Scopus, Web of Science and Google Scholar. During the literature selection, keywords such as “differentiated instruction”, “distance education”, “individualized learning strategies” were used. During the data collection process, only articles published in peer-reviewed journals and academic books were evaluated (Bozkurt, 2020).

### **3.2. Data Analysis**

The collected data were examined utilising the content analysis method since content analysis is a method that allows the systematic examination of texts under certain themes and categories (Krippendorff, 2019). In the study, basic themes such as the effects of differentiated instruction strategies on distance education, implementation processes, and difficulties encountered were determined. The data obtained in line with these themes were interpreted in the light of the existing literature.

### **3.3. Ethical Principles**

In the study, ethical principles were observed and care was taken to reference the sources correctly. In addition, only open access sources and legally accessible data were used. This increased the transparency and reliability of the research (Resnik, 2020).

### **3.3. Reliability and Validity**

The reliability and validity of the study were ensured by selecting the analyzed sources from reliable scientific databases and systematically performing the content analysis process. In particular, priority was given to empirical studies on the effects of differentiated instruction on student achievement and implementation processes in distance education (Santangelo & Tomlinson, 2012).

## 4.FINDINGS

In this section, the literature review and analysis of the current findings on the effects of differentiated instruction strategies on distance education and the difficulties encountered in the implementation process will be presented in line with the research questions. The findings, together with the existing studies included in the literature review, cover the effects of differentiated instruction in distance education on student success, motivation and participation, the obstacles encountered and the suggested solutions.

### 4.1. The Impact of Differentiated Instruction Strategies on Distance Education

Differentiated instruction aims to provide students with individualized learning experiences in distance education. In many studies, it has been observed that this teaching method has positive effects on students' academic success. Alghamdi (2022) and Tomlinson (2017) state that differentiated instruction strategies enable students to take part more actively in the learning process and use learning materials more efficiently. In distance education, the ability of teachers to provide students with individualized content and feedback increases students' motivation and success levels (Heacox, 2012). For example, Karadayı Evyapan (2021) accentuates the fact that differentiated teaching methods in distance education are effective in increasing students' success, especially in mathematics courses. The study shows that providing students with materials selected based on their interests and different teaching strategies increases their participation in the learning process and turn students into more active participants. This finding reveals that distance education creates an effective strategy in increasing success by allowing students to learn at different speeds and in diverse ways.

### 4.1. The Impact of Differentiated Instruction Strategies on Student Engagement

Differentiated instruction aims to increase students' interest in learning by adapting course materials and teaching processes according to their interests and needs. Many studies reveal that this strategy has a significant effect on students' motivation. Especially in distance education, students are often encouraged to work individually, and differentiated instruction increases their motivation by offering students the opportunity to progress according to their own learning pace (Tomlinson & Moon, 2013). Bozkurt et al. (2020) obtained findings that students' motivation increases in distance education. Course contents designed according to students' interests have strengthened their participation in the course. In addition, teachers' feedback

and interactive course materials increase students' interest in the learning process. This allows teaching to be more efficient and students to take more active roles in the courses.

#### **4.1. Challenges Encountered**

The challenges encountered in implementing differentiated instruction in distance education are a prominent issue due to inequalities in education and the complexity of teaching processes. Although differentiated instruction aims to provide educational content customized to each student's learning style, pace, and needs, some challenges encountered in practice can limit the effectiveness of these strategies. Literature reviews show that these challenges are generally grouped in three fundamental areas: problems with access to technology, teachers' lack of pedagogical knowledge, and differences in digital literacy levels.

##### **4.1.1. Problems with Access to Technology**

Access to technology in distance education is a critical factor for the success of differentiated instruction strategies. Although the transfer of educational materials to online environments along with the developing digital infrastructure has offered the opportunity to individualize students' learning processes, equal access cannot be provided for all students. A study conducted by Bozkurt et al. (2020) reveals that the digital divide poses a major obstacle, especially for students from low-income families. This situation deepens inequalities in education and limits students' learning opportunities. Alghamdi (2022) emphasizes that students' inability to access content, video lessons, and online assessments in distance education can negatively affect the effectiveness of differentiated teaching strategies. In particular, low-speed Internet connections or lack of technological devices lead to inequality in education.

Karadayı Evyapan (2021) states that the difficulties experienced by students, especially those living in rural areas, in accessing technology disrupt their educational processes. These students cannot take part in classroom interactions and have difficulty receiving feedback from teachers. It is a finding emphasized in many studies that in order for differentiated teaching to be effective in distance education, students must have equal access to technology.

#### **4.1.2. Teachers' Lack of Pedagogical Knowledge**

Differentiated teaching requires teachers to be able to provide content adapted to the individual needs of students. However, it is of immense significance for teachers to have pedagogical knowledge and skills in order to use these teaching strategies effectively. Tomlinson (2017) and Heacox (2012) link the difficulties teachers face in implementing differentiated instruction strategies to their lack of sufficient pedagogical knowledge. These strategies require skills such as providing individualized feedback to students, adapting course content according to learning speeds, and addressing various learning styles. However, many teachers do not have these skills, which reduces the effectiveness of their teaching processes.

Santangelo and Tomlinson (2012) state that teachers' lack of adequate professional development opportunities on differentiated instruction leads to limited implementation of these strategies. Many teachers need guidance on how to effectively implement differentiated instruction methods in education. In addition, teachers need to have access to appropriate materials and resources in order to use these strategies. However, when working with limited resources, teachers have difficulty individualizing their teaching processes and providing students with customized learning experiences (Tomlinson & Moon, 2013).

#### **4.1.3. Digital Literacy and Student Differences**

For a successful learning process in distance education, students need to have elevated levels of digital literacy. Digital literacy enables students to effectively access, interact with, and analyze information on digital platforms. However, there are enormous differences in digital literacy levels among students. Powell and Kusuma-Powell (2011) state that digital literacy deficiencies make it difficult for students to understand course materials and that this deficiency can result in failure in education. This makes it even more complicated to adapt differentiated teaching strategies to the needs of each student. Teachers need to provide guidance so that students can use digital tools effectively. However, teachers also have limited knowledge about digital literacy, which is another important challenge encountered in distance education.

#### **4.2. Solutions Proposals**

Eliminating digital literacy deficiencies, enhancing teachers' pedagogical skills, and providing equal access to technology are discovered to be fundamentally necessary solutions to increase the effectiveness of differentiated

instruction in distance education. Solution proposals in the literature offer various strategies to overcome these difficulties and implement differentiated instruction more efficiently.

#### **4.2.1 Professional Development Support for Teachers**

In order for differentiated instruction strategies to be implemented effectively, it is important for teachers to have professional development opportunities in this regard. Tomlinson (2017) states that it would be beneficial for teachers to take part in continuous education and training programs to develop strategies proper for diversity in education. In addition, Heacox (2012) emphasizes the importance of teachers taking part in interactive training programs to overcome the difficulties they encounter while implementing differentiated instruction. These training programs provide teachers with practical information on how to effectively implement differentiated instruction strategies. Another suggestion is to organize trainings for teachers to increase their digital literacy skills. Such training will enable teachers to use digital tools more effectively and enable them to have a more successful teaching process in distance education. In addition, developing teachers' skills in creating digital educational materials allows them to provide more effective and engaging content to students (Powell & Kusuma-Powell, 2011).

#### **4.2.2. Technological Infrastructure Investments**

In order to eliminate digital inequalities in education, states and educational institutions need to invest in technological infrastructure. Bozkurt (2020) states that educational institutions should provide students with the necessary digital tools to eliminate the problems of low-income students' access to technological devices. Providing equal access to technology will enable students to take part more in the learning process and access course content more efficiently. In this context, investment in internet infrastructure is also needed to close the digital gap in education.

#### **4.2.3. Digital Literacy Education**

Digital literacy education is critical for students' success in distance education. These trainings need to be included in the school curriculum to enable students to use digital platforms more effectively. Digital literacy training will improve students' skills in analyzing digital materials, using online resources, and collaborating in digital environments (Alghamdi, 2022). In addition, guidance and continuous feedback provided by teachers will help students gain these skills more quickly.

### 4.3. Student Success and the Role of Differentiated Instruction

Finally, it is also important to see how differentiated instructional strategies play a role in increasing student success in distance education. Studies show that teachers' adaptation of course content and teaching methods to students' individual needs is effective in increasing student success levels (Subban, 2006). For example, in a study conducted with middle school students, Altay Nacar Güzel & Döş (2024) put an influential emphasis on the fact that differentiated instructional methods significantly increased students' course success. Students were more successful in classes by working with more interesting and personally meaningful content.

## 5. DISCUSSION, CONCLUSION AND RECOMMENDATIONS

The findings of this study reveal that the implementation processes of differentiated instruction in distance education pose many challenges for teachers and students, and these challenges greatly affect the effectiveness of education. First of all, lack of digital infrastructure poses a major obstacle, especially for low-income students (Bozkurt, 2020). It is understood that digital inequalities in education make it difficult to successfully implement differentiated instruction strategies in distance education. This situation negatively affects the participation of students who do not have technological devices and fast internet access in the educational processes. Karadayı Evyapan (2021) also states that students living in rural areas are deprived of learning opportunities due to technological inequality. In this context, closing the digital gap is a critical necessity for students to have equal opportunities in their learning processes.

Teachers' lack of pedagogical knowledge also poses a significant obstacle. Heacox (2012) and Tomlinson (2017) emphasize that teachers need professional development opportunities in order to use differentiated instruction strategies effectively. The difficulties that teachers encounter while implementing differentiated instruction make it difficult for them to provide appropriate content and interact with students according to their individual needs. In this case, teachers need to take part in continuous training in order to develop strategies proper for diversity in education (Tomlinson & Moon, 2013). In addition, the level of digital literacy is another influential factor affecting student success. Digital literacy facilitates students' access to online materials and resources and supports their learning processes. However, inequalities in digital literacy negatively affect students' success in distance education. Powell and Kusuma-Powell (2011) also state that digital literacy

deficiencies cause students to experience difficulties in online learning processes. Therefore, strengthening digital literacy training will improve students' learning skills and increase the effectiveness in distance education.

Finally, solution suggestions for the difficulties encountered by teachers and students reveal that digital inequalities in education should be eliminated and pedagogical skills should be increased. Bozkurt (2020) and Alghamdi (2022) draw attention to the importance of organizing continuous professional development programs for teachers. It is also emphasized that digital literacy training should be strengthened for students. Necessary support should be provided for teachers to use digital tools effectively and provide proper content to students.

This study addressed the main challenges encountered in increasing the effectiveness of differentiated instruction in distance education and offered solutions to overcome these challenges. The findings of the study show that digital infrastructure inequalities, teachers' lack of pedagogical knowledge, and students' digital literacy differences limit the applicability of differentiated instruction strategies. In order to overcome these challenges, it is important to increase digital infrastructure investments, provide professional development programs for teachers, and provide digital literacy training to students. In addition, supporting such training with research to be conducted with larger sample groups and various education levels will increase the generalizability of the findings. As a result, reshaping educational policies and strategies and eliminating digital inequality is of immense importance for successful differentiated teaching in distance education.

### **Recommendations;**

- **Conducting Studies with Larger Sample Groups:** In this study, the difficulties in implementing differentiated education in distance education were addressed in a specific context. However, studies conducted with larger sample groups and participants from different education levels can increase the generalizability of the findings. Studies supported by more diverse data sets can more clearly reveal the effects of factors such as digital inequality, pedagogical knowledge deficiencies, and digital literacy on different student groups and can provide more comprehensive recommendations to policy makers.
- **Development of Digital Literacy Education Models in Distance Education:** The study reveals that digital literacy deficiencies negatively affect students' success and make learning processes difficult in distance education. Students' ability to use digital tools and resources

effectively can enable them to be more successful in their learning processes. In the future, designing specific educational programs and models to develop digital literacy skills will support students' learning processes and increase the applicability of differentiated education in distance education.

- **Development of Digital Literacy Education Models in Distance Education:** The study reveals that digital literacy deficiencies negatively affect students' success and make learning processes difficult in distance education. Students' ability to use digital tools and resources effectively can enable them to be more successful in their learning processes. In the future, designing specific educational programs and models to develop digital literacy skills will support students' learning processes and increase the applicability of differentiated education in distance education.
- **Designing Social Support Programs to Reduce Digital Inequality in Distance Education:** Research findings show that lack of digital infrastructure is a significant obstacle, especially for low-income students and individuals living in rural areas. This inequality negatively affects participation in educational processes and student success. In the future, social programs can be designed to provide technology and internet access support for disadvantaged student groups. For example, providing free internet access, providing devices or developing low-cost technology solutions through state and private sector collaboration can ensure that these students participate equally in distance education processes. Such an initiative will not only increase students' individual success, but will also be an important step in terms of social equality.

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